HCD-H650/H650M

SERVICE MANUAL

AEP Model
E Model
Australian Model
HCD-H650

Canadian Model
AEP Model
UK Model
HCD-H650M

- HCD-H650 is the tuner, deck, CD and amplifier section in FH-650/B711.
- HCD-H650M is the tuner, deck, CD and amplifier section in MHC-650.

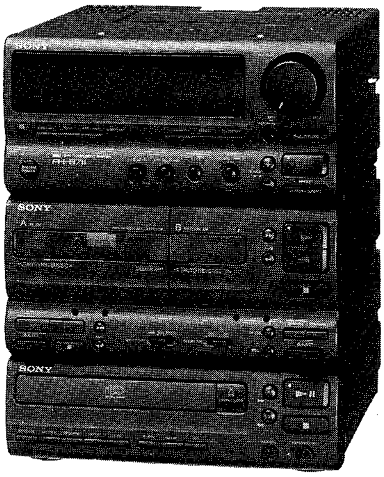

Photo : HCD-H650 E model

CD Section	Model Name Using Similar Mechanism		NEW
	CD Mechanism Type		CDM28-5BD15A
	Base Unit Name		BU-5BD15A
Tape deck Section	Model Name Using Similar Mechanism		HCD-H61/H61M
	Tape Transport Mechanism Type	DECK A	TCM-190RA12AL
		DECK B	TCM-190RB53A

SPECIFICATIONS

CD player section

System Compact disc digital audio system
Laser Semiconductor laser
Wavelength 780 – 790 nm

Tuner section

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range 87.5 -108.0 MHz (50 kHz step for except Canadian, East European model) (100kHz step for Canadian model)
FM1 : 65 - 74MHz
FM2 : 87.5 - 108MHz
(East European model)
Aerial FM lead antenna (HCD-650M)
FM telescopic aerial (HCD-650)
Aerial terminals
75 ohm unbalanced
Intermediate frequency
10.7 MHz

AM tuner section

AEP, UK, East European, German model :
Tuning range
MW: 531 - 1,602 kHz
LW: 153 - 279 kHz
Canadian model : AM: 530 -1,710 kHz (10 kHz Step)
531 - 1,710 kHz (9kHz Step)
Italian model : MW : 522 - 1611kHz (9kHz step)
LW : 153 - 279kHz
Australian, MX, E, Saudi Arabia, Malaysia, Singapore model :
MW: 531 - 1,602 kHz (9 kHz step)
530 - 1710 kHz (10 kHz step)
SW: 5.95 - 17,9MHz

Aerial AM loop aerial
External aerial terminals
Intermediate frequency
450 kHz

Cassette deck section

Recording system
4-track 2-channel stereo
Frequency response
(DOLBY NR OFF)
60 – 13,000 Hz (±3 dB), using TYPE I cassette (Sony HF-S)
60 – 14,000 Hz (±3 dB), using TYPE II cassette(Sony UX-S)
Wow and flutter
0.1% WRMS +0.3% (DIN)

Amplifier section

For UK, AEP model :
Continuous RMS power output:
35+35 watts (6 ohms at 1 kHz, DIN)
40+40 watts (6 ohms at 1 kHz, 5% THD)
Music power output:
80+80 watts (6 ohms at 1 kHz)
For Canadian model :
Continuous RMS power output:
40+40 watts (6 ohms at 1 kHz, 5%)
For Singapore, E, Saudi Arabia, Malaysia, Australian, MX model :
Coutionuous RMS Power output:
40+40 watts (6 ohms at 1 kHz, 5% THD)
Peak music power output:
500 watts (4 speakers driven)

Inputs
MIX MIC (mini jack):
for Canadian, Australian, E, Saudi Arabia, MX, Malaysia, Singapore model :
Sensitivity 1 mV, impedance 600 ohms
MD/AUX (phono jack):
for Canadian, Australian, E, Saudi Arabia, MX, Malaysia, Singapore model :
Sensitivity 450 mV, impedance 47 kilohms

— Continued on page 2 —

MICROFILM

COMPACT DISC DECK RECEIVER

SONY®

MD/PHONO :(MD Position)
For UK, AEP, G, IT, EE model :
Sensitivity 5 mV
MD/PHONO :(Phono Position)
for AEP, UK, German, Italian, East European model :
Sensitivity 250mV,
impedance 47 kilohms

Outputs
HEADPHONES (stereo mini jack): accept headphones of 8 ohms or more.
SPEAKER: accept impedance of 6 to 16 ohms.
SURROUND SPEAKER:
For E, Australian, Saudi Arabia, Malaysia, MX model :
accept impedance of 8 to 16 ohms.
Singapore model :16 Ωs.

Speaker section

Speaker system 3-way system
Speaker units Woofer: 13 cm dia., cone type
Tweeter: 5 cm dia., cone type
Super tweeter: 2 cm dia., dome type
Enclosure Bass reflex
Frequency range 65 Hz - 20 kHz
Sensitivity 88 dB/W/m
Rated impedance 6 ohms
Dimensions Approx. 175 x 285 x 235 mm (w/h/d) (7 x 11 1/4 x 9 3/8 inches)
Mass Approx. 2.8 kg net per speaker (6 lb. 2.8 oz.)

General

Destination	Power requirements	Power consumption
Canadian model	120V AC, 50Hz	120W
Australian model	220 – 240V AC, 50Hz	150W
AEP, German, Italian, East European model	220 – 230V AC, 50/60Hz	120W
UK model	240V AC, 50Hz	120W
E, Saudi Arabia, MX, Malaysia, Singapore model	110 – 120V/220V – 240V AC, 50/60Hz Adjustable with the Voltage Selector	150W

Dimensions Approx. 225 x 285 x 275 mm (w/h/d) (8 7/8 x 11 1/4 x 10 7/8 inches) incl. projecting parts and controls
Mass Approx. 6.5 kg (14 lb. 50 oz.)

Design and specifications are subject to change without notice.

Note
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol ᗡᗞ are trademarks of Dolby Laboratories Licensing Corporation.

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SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

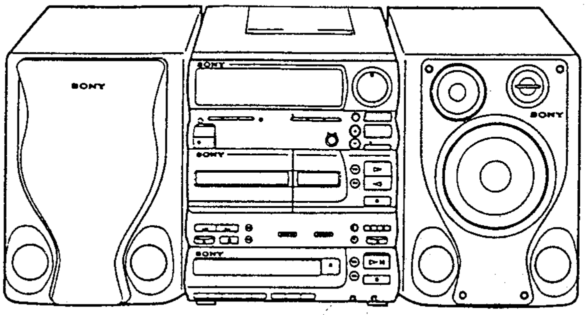
FH- /MHC-650

SERVICE MANUAL

AEP Model
FH-B650 :

E Model
Australian Model
FH-B711 :

Canadian Model
AEP Model
UK Model
MHC-650 :



- The FH-B650/B711 and MHC-650 are composed of the models below. Service manuals are issued for each of the component models, so please refer to each of the manuals.

COMPONENTS MODEL

SET	TUNER, DECK, CD, PLAYER, AMP	SPEAKER	REMOTE COMMANDER
FH-B650 (AEP, AED, G, MX)	HCD-H650	SS-H650	RM-S755
FH-B711 (E, EA, AUS, MY, SP)			
MHC-650 (CND, AEP, UK, AED, EE, IT)	HCD-H650M		

- AUS : Australian
  CND : Canadian
  EA : Saudi Arabia
  EE : East European
  G : German
  IT : Italian
  MX : Mexican
  MY : Malaysia
  SP : Singapore

- AED : German
  Norway
  Sweden
  Finland
  Denmark

SPECIFICATIONS

Destination	Power requirements	Power consumption
Canadian model	120V AC, 50Hz	120W
Australian model	220 – 240V AC, 50Hz	150W
AEP, German, Italian, East European model	220 – 230V AC, 50/60Hz	120W
UK model	240V AC, 50Hz	120W
E, Saudi Arabia, Malaysia, Singapore, Mexican model	110 – 120V/220V – 240V AC, 50/60Hz Adjustable with the Voltage Selector	150W

Dimensions	Approx. 225 × 285 × 275 mm (w/h/d) (8 7/8 × 11 1/4 × 10 7/8 inches) incl. projecting parts and controls
Mass	Approx. 6.5kg (14 lb. 50 oz.)

Design and specifications are subject to change without notice.

MINI HI-FI COMPONENT SYSTEM

SONY®

MICROFILM

2. PARTS LIST

NOTE :

- Items marked " ∗ "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

• AED : German
Norway
Sweden
Finland
Denmark

Ref. No.	Part No.	Description	Remark
	1-467-461-11	REMOTE COMMANDER(RM-S755)	
	1-501-594-21	ANTENNA(FM)(MCH-650)	
	1-751-623-11	CORD, SPEAKER(MHC-650)	
	2-181-754-21	COVER, BATTERY	
	3-758-277-11	MANUAL, INSTRUCTION(ENGLISH)	(Australian, Canadian, UK)
	3-758-277-41	MANUAL, INSTRUCTION (FRENCH/SPANISH/PORTUGUESE/DUTCH)	(AEP)
	3-758-277-51	MANUAL, INSTRUCTION(GERMAN)	(German)
	3-758-277-61	MANUAL, INSTRUCTION(ITALIAN)	(AEP, Italian)
	3-758-277-71	MANUAL, INSTRUCTION (ENGLISH/GERMAN)	(AEP, East European)
	3-758-277-81	MANUAL, INSTRUCTION(POLISH/RUSSIAN)	(East European)
	3-758-277-91	MANUAL, INSTRUCTION (DANISH/FINISH/SWEDISH)	(AED)
	3-758-278-41	MANUAL, INSTRUCTION(FRENCH)	(E, Saudi Arabia, Malaysia, Canadian)
	3-758-278-51	MANUAL, INSTRUCTION (ENGLISH/SPANISH/CHINES)	(E, Saudi Arabia, Malaysia, Mexcian, Singapore)
	3-758-278-71	MANUAL, INSTRUCTION(ARABIC)	(E, Saudi Arabia)
*	4-965-156-01	INDIVIDUAL CARTON	(E, Malaysia, Mexcian, Singapore)
*	4-965-157-01	INDIVIDUAL CARTON	(Saudi Arabia)
*	4-965-158-01	INDIVIDUAL CARTON	(Australian)
*	4-965-159-01	INDIVIDUAL CARTON	(FH-B650:AEP, German, AED)
*	4-965-160-01	INDIVIDUAL CARTON	(MCH-650:AEP, Italian, UK, AED, German)
*	4-965-161-01	INDIVIDUAL CARTON	(East European)
*	4-965-162-01	INDIVIDUAL CARTON	(Canadian)

Sony Corporation
Audio Group

English
94A0280-1
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Published by Audio Sector Quality Assurance Dept.

SECTION 1
GENERAL

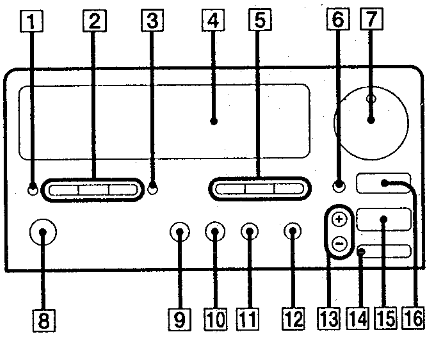
This section is extracted from HCD-H650 (E, Australian, Saudi Arabia, MX, Malaysia, Singapore Model) instruction manual.

LOCATION AND FUNCTION OF CONTROLS

● AUS : Australian
G : German
IT : Italian
MX : Mexican
EA : Saudi Arabia
EE : Easc European
MY : Malaysia
SP : Singapore

Front Panel

Tuner/Amplifier

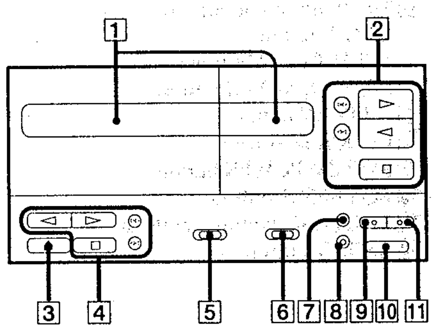


[1] Remote sensor
[2] TIMER SET button
DAILY button
REC TIMER button
[3] CLOCK SET button
[4] Display window
[5] KARAOKE PON button
EFFECT button
EQ PRESET button
[6] MEMORY/NEXT button
[7] VOLUME control
[8] SYSTEM POWER ON/STANDBY switch
[9] MIC LEVEL control
[10] DIGITAL ECHO control
[11] MULTIPLEX button

E, AUS, EA, MX, MY, SP model

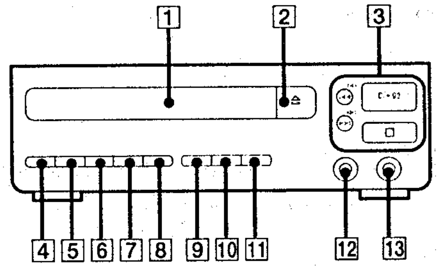
[12] DBFB button
[13] TUNER/TIMER (+/-) button
[14] PRESET/TUNING buttons
[15] TUNER/BAND button
[16] FUNCTION button

Tape player



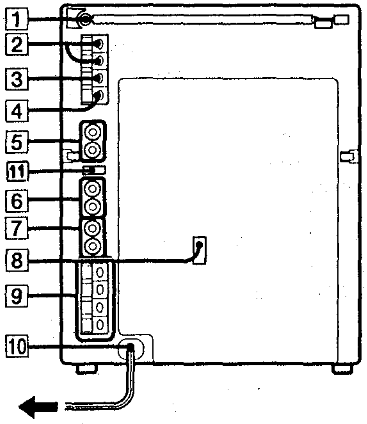
[1] Tape compartments
[2] Tape operating buttons and lamp (for deck B)
[3] ≜ button (for deck A)
[4] Tape operating buttons and lamp (for deck A)
[5] DIRECTION switch
[6] DOLBY NR switch
[7] ⏸ PAUSE button
[8] ● REC button
[9] HIGH SPEED DUBBING button
[10] ≜ button (for deck B)
[11] CD SYNCHRO button

CD player



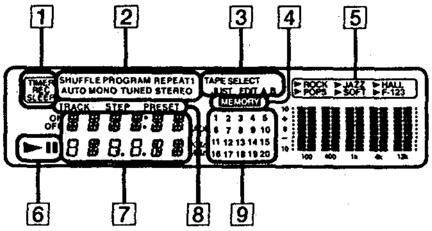
[1] CD tray
[2] ≜ OPEN/CLOSE button
[3] CD player operating buttons
[4] CONTINUE button
[5] SHUFFLE button
[6] PROGRAM button
[7] REPEAT button
[8] TIME button
[9] CHECK button
[10] CLEAR button
[11] EDIT button
[12] MIX MIC jack
[13] HEADPHONES jack

Rear Panel


1
2
3
4
5
11
6
7
8
9
10

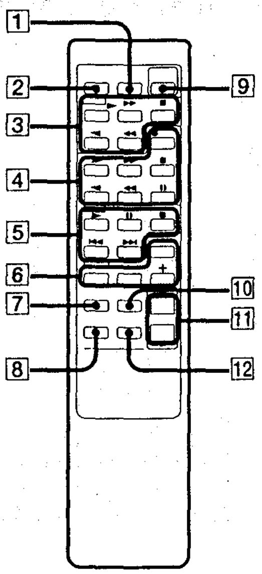
1 FM telescopic aerial (H650 ONLY)
2 FM 75Ω terminals
3 ⏚ earth terminal
4 AM terminal
5 MD/PHONO jacks (AEP, UK, G, IT, EE model)
MD/AUX jacks (Canadian, E, EA, AUS, MX, MY, SP model)
6 LINE OUT jack
7 SURROUND SPEAKER jack (E, AUS, EA, MY, SP, MX, model)
8 VOLTAGE selector (except for Mexican models) (E, EA, MX, MY, SP model)
9 SPEAKER connector
10 AC power cord
11 MD/PHONO Selector

Display Window


1
2
3
4
5
TIMER
REC
SLEEP
SHUFFLE PROGRAM REPEAT1
AUTO MONO TUNED STEREO
TAPE SELECT
JUST EDIT A B
MEMORY
▶ROCK ▶JAZZ ▶HALL
▶POPS ▶SOFT ▶F-123
TRACK STEP PRESET
ON
OFF
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
100 400 1k 4k 12k
6
7
8
9

1 Timer indications
2 CD play and Tuner indication
3 CD recording indication
4 MEMORY indication
5 Audio emphasis indication
6 CD play and pause indication
7 Time/frequency indication
8 TRACK/STEP/PRESET indication
9 Music calendar/preset radio station numbers

Remote commander

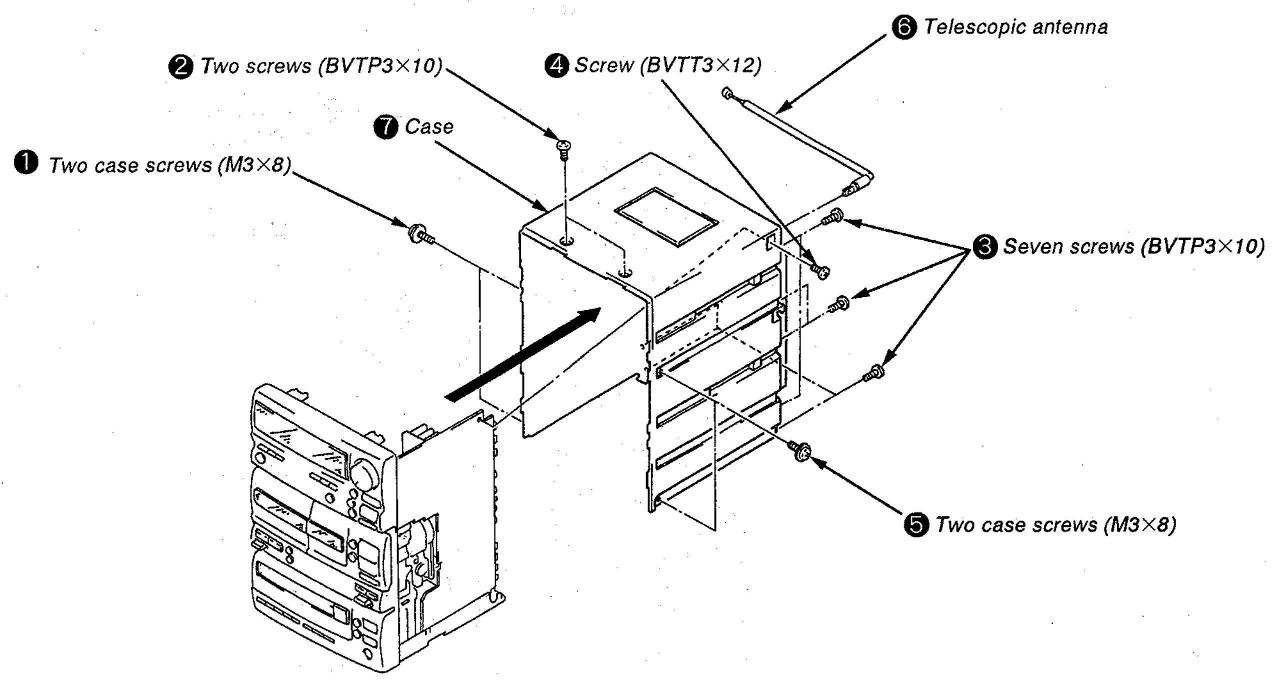

1
2
3
4
5
6
7
8
9
10
11
12

1 SLEEP button
2 FUNCTION button
3 Deck A operating buttons
▶ (front side play)
◀ (reverse side play)
▶▶ (fast rightward)
◀◀ (fast leftward)
■ (stop)
4 Deck B operating buttons
▶ (front side play)
◀ (reverse side play)
▶▶ (fast rightward)
◀◀ (fast leftward)
❚❚ (pause)
■ (stop)
● REC (recording)
5 CD operating buttons
▶ (play)
⏮/⏭ AMS*
❚❚ (pause)
■ (stop)
* AMS: Automatic Music Sensor.
6 Tuner operating buttons
BAND button
PRESET (+/–) buttons
STEREO/MONO button
7 DISPLAY button
8 CLOCK DISPLAY
9 SYSTEM POWER button
10 EQ PRESET button
11 VOL (+/–) (volume) buttons
12 EFFECT button

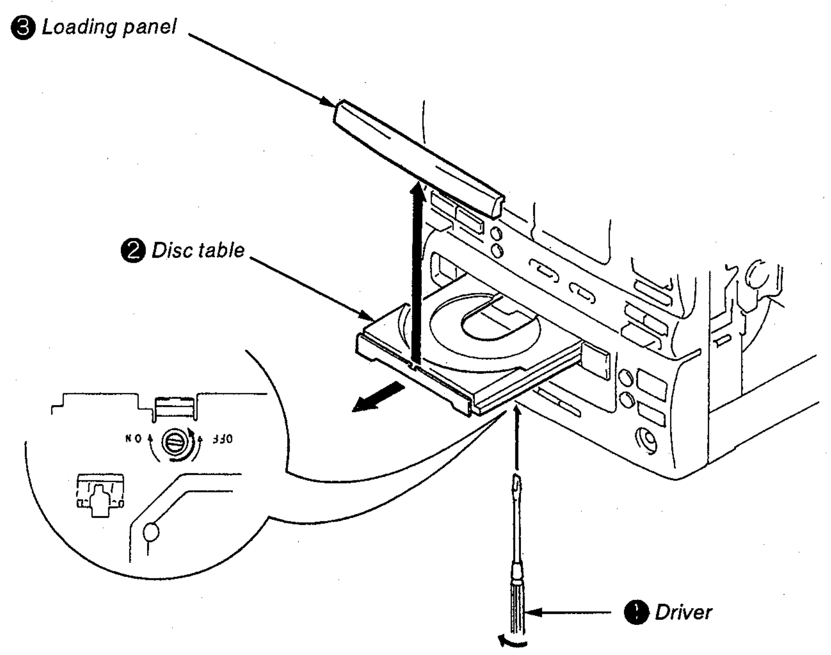
SECTION 2
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

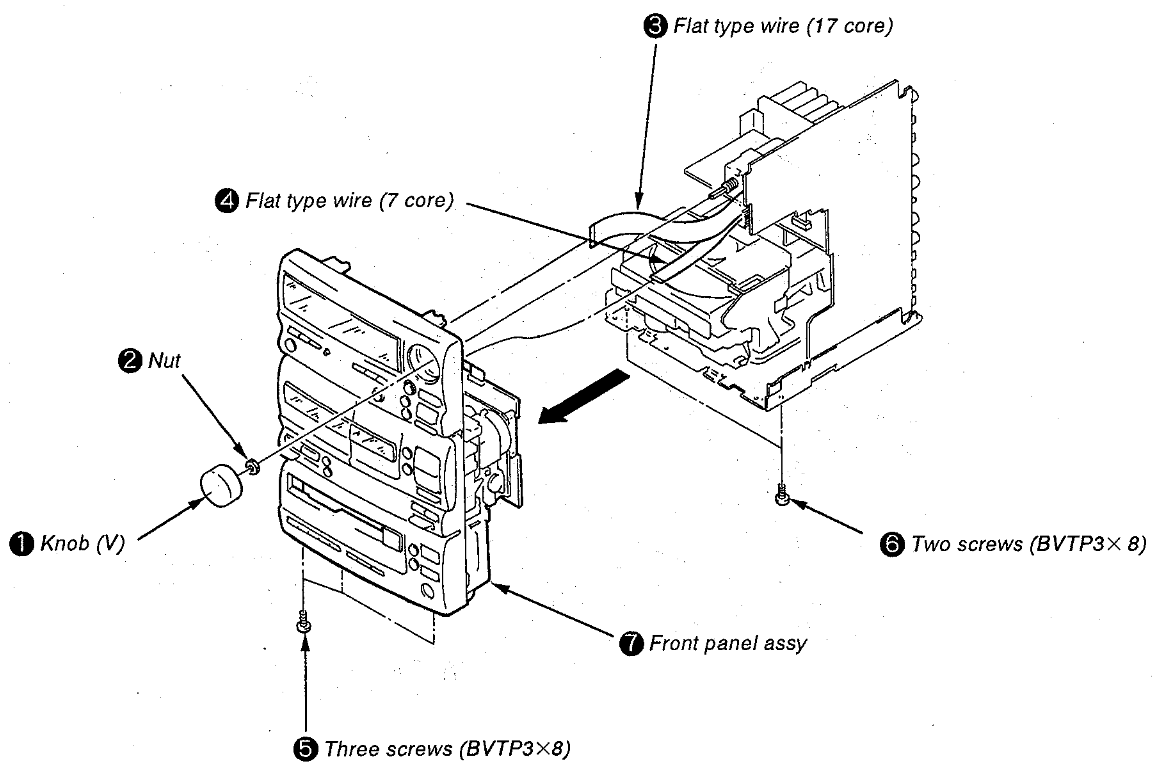
2-1. CASE REMOVAL


❻ Telescopic antenna
❷ Two screws (BVTP3×10)
❹ Screw (BVTT3×12)
❼ Case
❶ Two case screws (M3×8)
❸ Seven screws (BVTP3×10)
❺ Two case screws (M3×8)

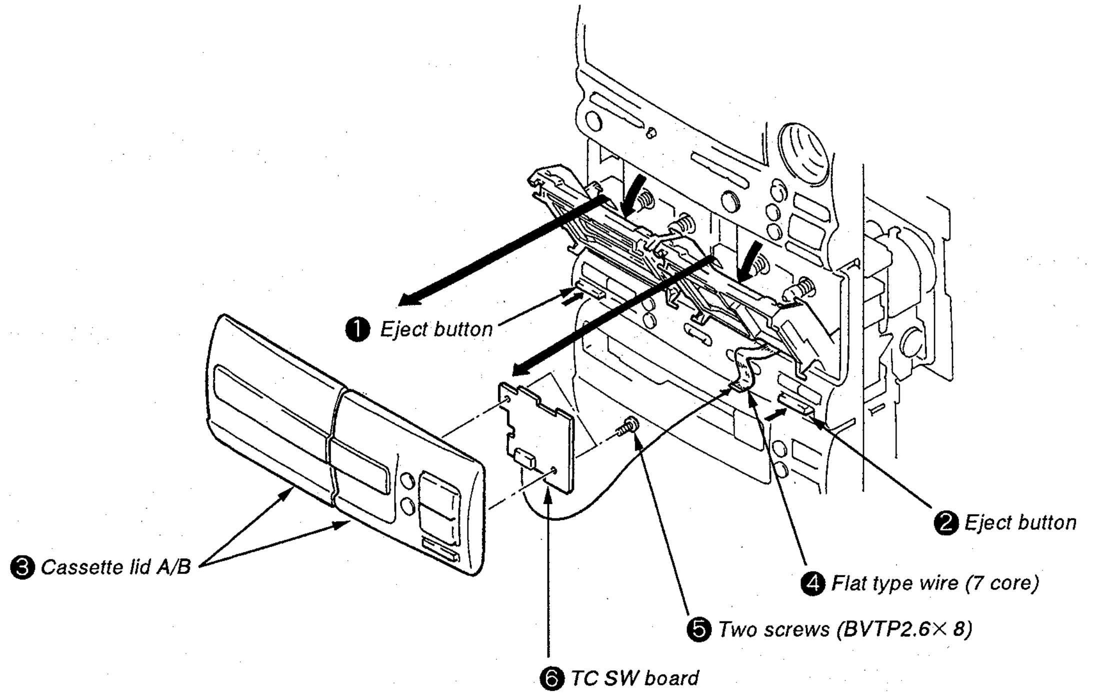
2-2. LOADING PANEL REMOVAL


❸ Loading panel
❷ Disc table
❶ Driver

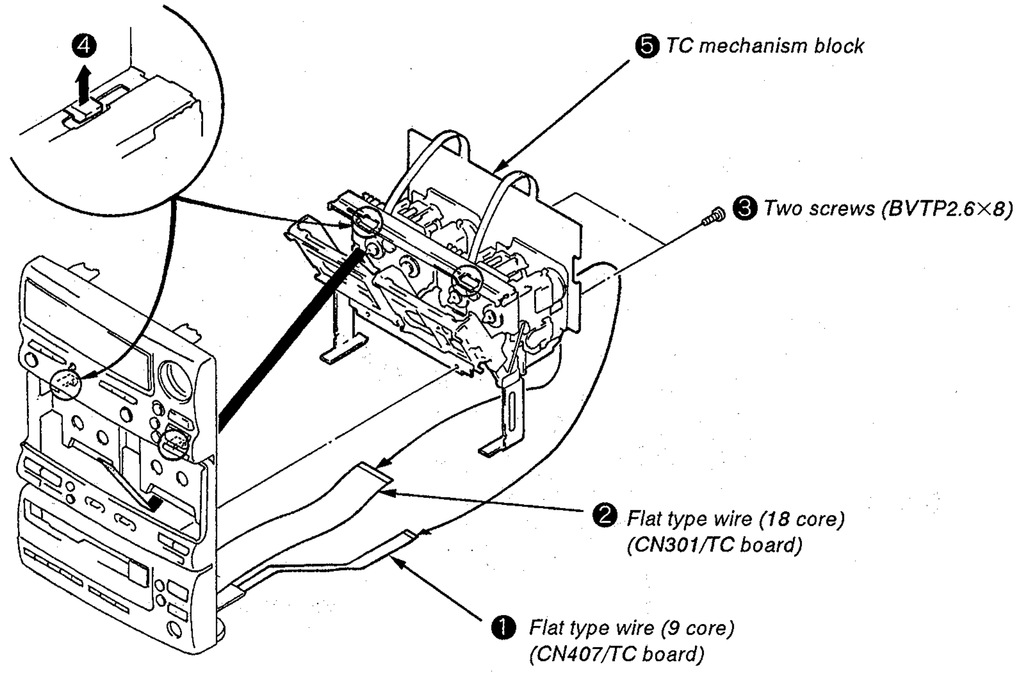
2-3. FRONT PANEL REMOVAL


❸ Flat type wire (17 core)
❹ Flat type wire (7 core)
❷ Nut
❶ Knob (V)
❻ Two screws (BVTP3× 8)
❼ Front panel assy
❺ Three screws (BVTP3×8)

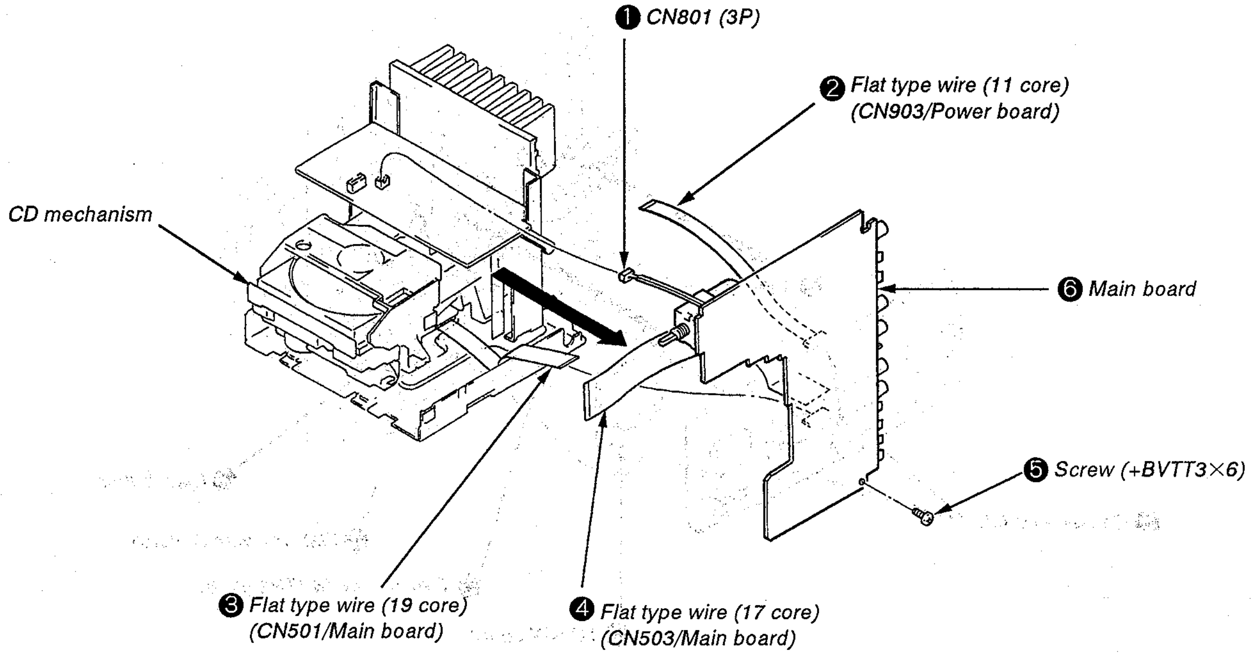
2-4. CASSETTE LID REMOVAL


❶ Eject button
❷ Eject button
❸ Cassette lid A/B
❹ Flat type wire (7 core)
❺ Two screws (BVTP2.6× 8)
❻ TC SW board

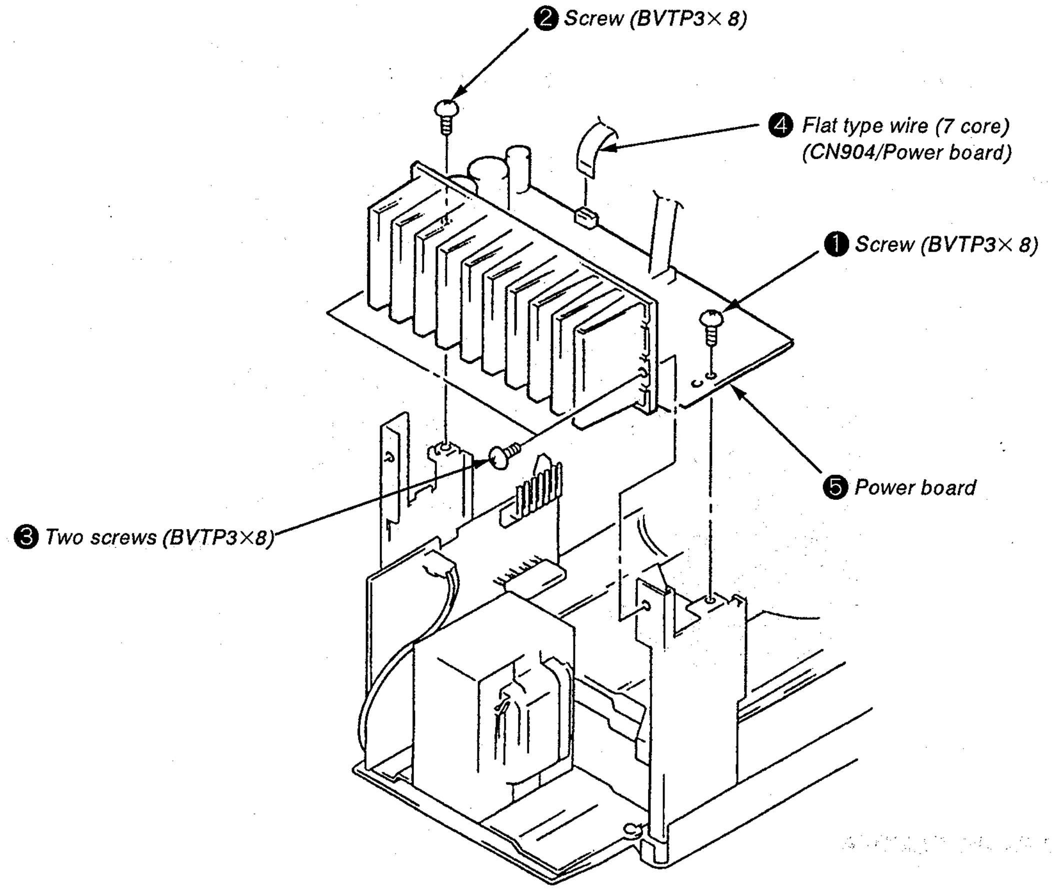
2-5. TC MECHANISM BLOCK REMOVAL


❹
❺ TC mechanism block
❸ Two screws (BVTP2.6×8)
❷ Flat type wire (18 core) (CN301/TC board)
❶ Flat type wire (9 core) (CN407/TC board)

2-6. MAIN BOARD REMOVAL


❶ CN801 (3P)
❷ Flat type wire (11 core) (CN903/Power board)
CD mechanism
❻ Main board
❺ Screw (+BVTT3×6)
❸ Flat type wire (19 core) (CN501/Main board)
❹ Flat type wire (17 core) (CN503/Main board)

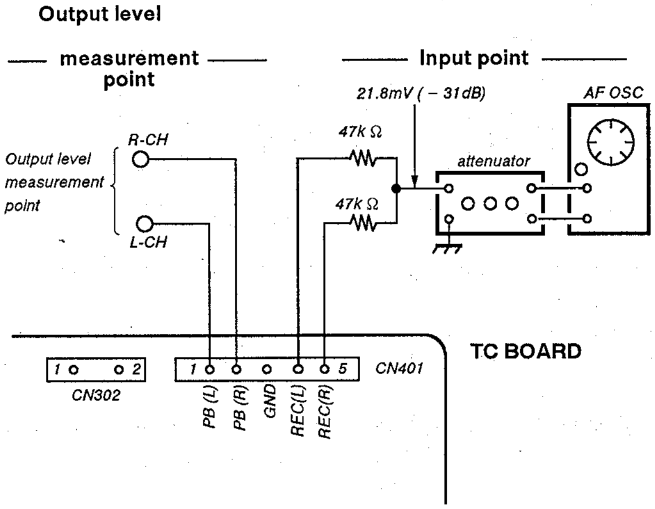
2-7. POWER BOARD REMOVAL


❷ Screw (BVTP3× 8)
❹ Flat type wire (7 core) (CN904/Power board)
❶ Screw (BVTP3× 8)
❺ Power board
❸ Two screws (BVTP3×8)

SECTION 3
ELECTRICAL ADJUSTMENTS

DECK SECTION

1. The adjustment should be performed in the publication.
   (Be sure to make playback adjustment at first.)
2. The adjustment and measurement should be performed for both L-CH and R-CH.
   - Switch positon
     DOLBY NR switch : OFF
     FUNCTION button : CD
3. Perior to electrical adjustments, short the connector CN401 (test mode).
4. Input point and output level measurement point.


Output level
measurement point
Input point
21.8mV (– 31dB)
AF OSC
47k Ω
47k Ω
attenuator
R-CH
L-CH
Output level measurement point
TC BOARD
1 2
CN302
1 5
CN401
PB (L)
PB (R)
GND
REC(L)
REC(R)

- **Test Tape**

Tape	Contents	Use
P-4-A100	10kHz, – 10dB	Head Azimuth Adjustment
P-4-L300	315Hz, 0dB	Level Adjustment
WS-48B	3kHz, 0dB	Tape Speed Adjustment

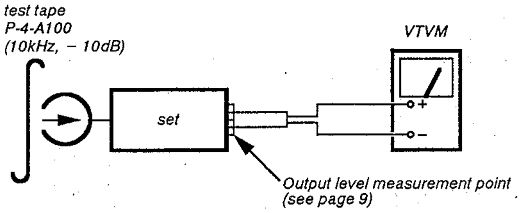
0 dB=0.775V

Record/Playback Head Azimuth Adjustment

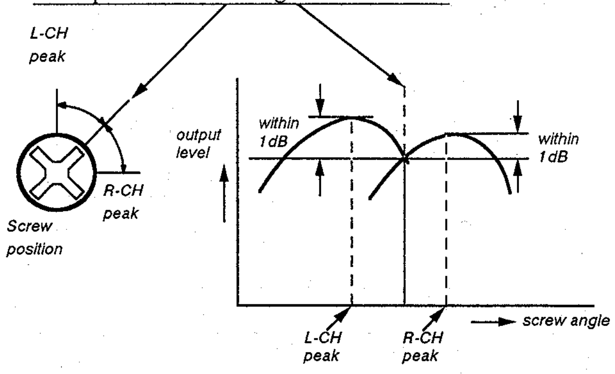
DECK A **DECD B**

Procedure :

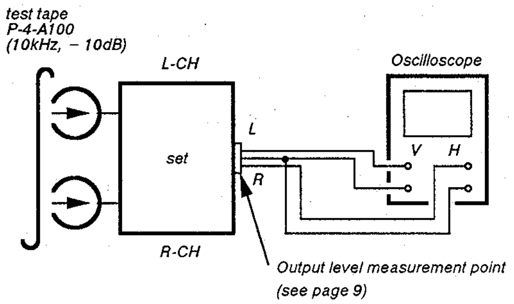
1. Forward Playback mode
   Reverse Playback mode

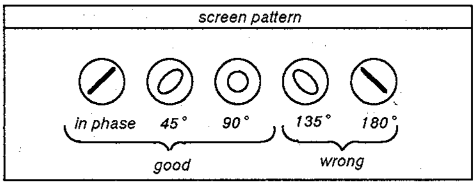

test tape
P-4-A100
(10kHz, – 10dB)
set
VTVM
+
–
Output level measurement point
(see page 9)

2. Turn the adjustment screw for the maximum output levels.If these levels do not match,turn the adjustment screw until both of output levels match together within 1dB.


L-CH
peak
R-CH
peak
Screw
position
output
level
within
1dB
within
1dB
L-CH
peak
R-CH
peak
screw angle

3. Playback Mode

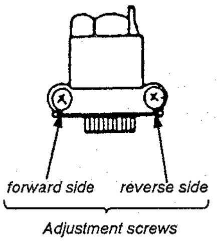

test tape
P-4-A100
(10kHz, – 10dB)
L-CH
set
R-CH
L
R
Oscilloscope
V
H
Output level measurement point
(see page 9)

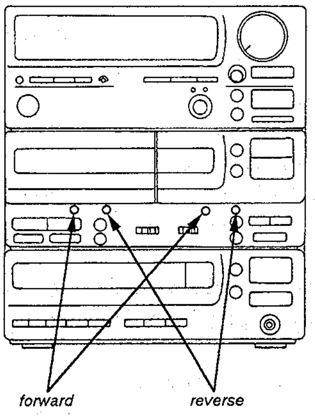

screen pattern
in phase
45°
90°
135°
180°
good
wrong

4. Change the review playback mode and repeat the steps 1 to 3.
5. After the adjustment, lock the adjustment screw with suitable locking compound.

Adjustment Location :

– record/playback head (Deck A and B)

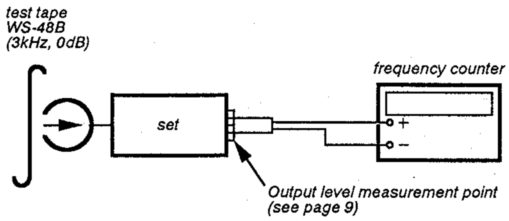

forward side
reverse side
Adjustment screws


forward
reverse

Tape Speed Adjustment DECK A DECK B

Procedure :

- Perform high speed adjustment before normal speed adjustment.
  Mode : Playback


test tape
WS-48B
(3kHz, 0dB)
set
frequency counter
+
−
Output level measurement point
(see page 9)

Speed	Deck	Adjustment	Frequency counter
※ High	A	RV72	5,970 to 6,030Hz
	B	RV72	
Normal	A	RV71	2,985 to 3,015Hz
	B	RV71	

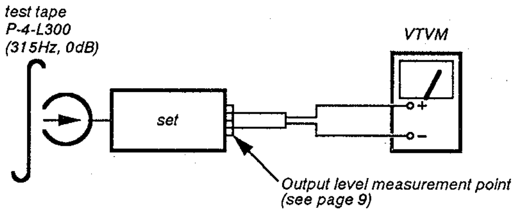
* Continue to press HIGH SPEED DUBBING switch (S3019) in playback mode : High speed playback.

Frequency difference between the begining and the end of the tape should be within ± 3%.
Frequency difference between deck A and deck B the biginning of the tape should be within 1.5%.

Adjustment Location : MD (AX) and MD (BX) boards.
(see page 11)

Playback Level Adjustment DECK A DECK B

Procedure :
Mode : Playback


test tape
P-4-L300
(315Hz, 0dB)
set
VTVM
+
−
Output level measurement point
(see page 9)

Deck A is RV11(L-CH)and RV21(R-CH), deck B is RV11(L-CH) and RV21(R-CH) so that adjustment within adjustment level as follows.

Adjustment Level :
LINE OUT level: − 7.5 ± 0.5dB (0.31 to 0.35V)
Level Difference between Channels : within 0.5dB

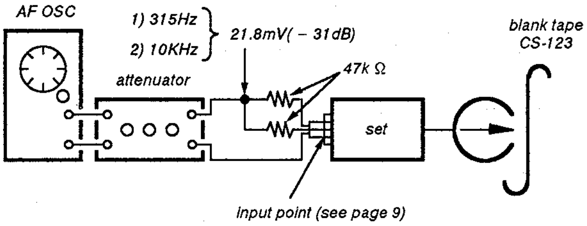
Confirm the DOLBY OUT level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location : MD (AX) and MD (BX) boards
(see page 11)

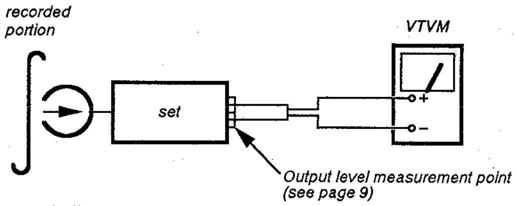
Record Bias Adjustment DECK B

Procedure :

1. Record mode


AF OSC
1) 315Hz
2) 10KHz
21.8mV(− 31dB)
attenuator
47k Ω
set
blank tape
CS-123
input point (see page 9)

2. Playback mode


recorded
portion
set
VTVM
+
−
Output level measurement point
(see page 9)

Confirm playback the signal recorded in step 1 become adjustment level as follows.
If these levels do not adjustment level, adjustment the RV12 (L-CH) and RV22 (R-CH) to repeat step 1 and 2.

Adjustment level : Playback output of 315Hz to playback output of 10kHz : − 0.5dB to 0.5dB.
(− 1.3 to 1.3mV)

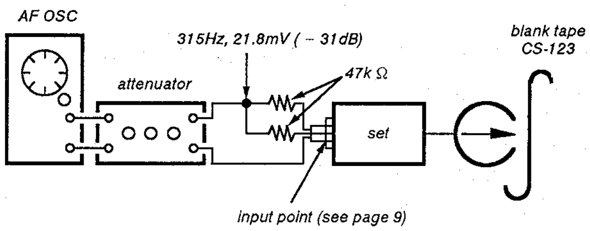
Adjustment Location : MD (BX) board. (see page 11)

Record Level Adjustment DECK B

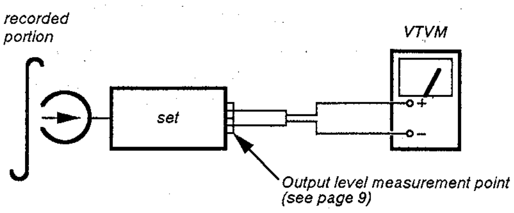
FUNCTION button : CD

Procedure :

1. Record mode


AF OSC
315Hz, 21.8mV (− 31dB)
attenuator
47k Ω
set
blank tape
CS-123
input point (see page 9)

2. Playbacd mode


recorded
portion
set
VTVM
+
−
Output level measurement point
(see page 9)

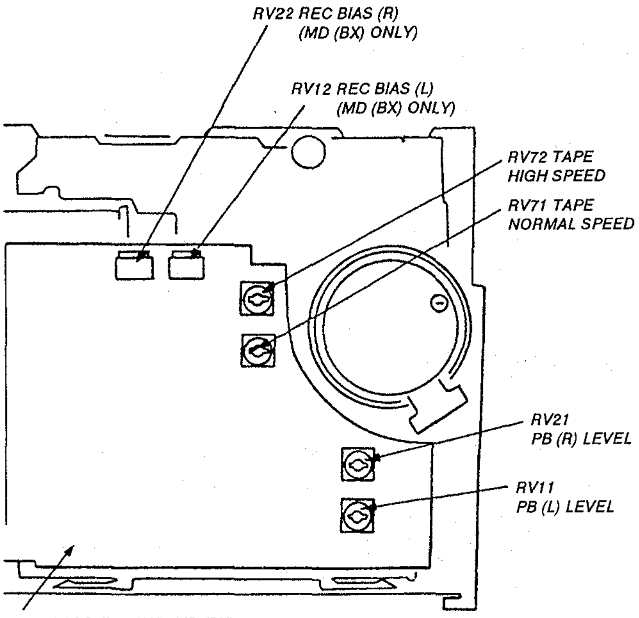
Confirm playback the signal recorded in step become adjustment level as follows.
If these levels do not adjustment level, adjustment the RV401 (L-CH) and RV451 (R-CH) to repeat step 1 and 2.

Adjustment Level :
DOLBY OUT level : − 31dB ± 0.5dB (20.6 to 23.1mV)

Adjustment Location : TC board

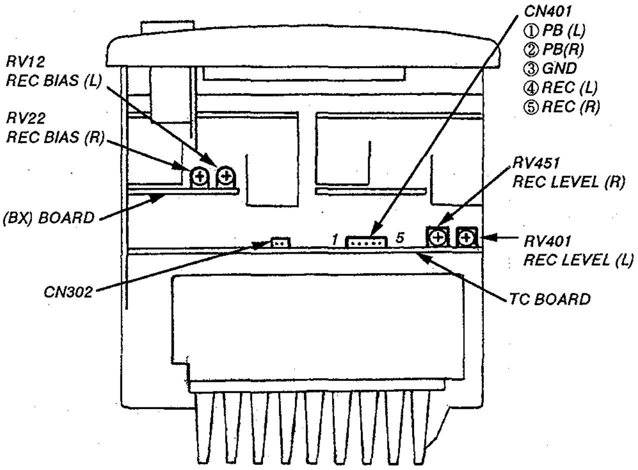
Adjustment Location :

Mechanism deck − rear side −


RV22 REC BIAS (R)
(MD (BX) ONLY)
RV12 REC BIAS (L)
(MD (BX) ONLY)
RV72 TAPE
HIGH SPEED
RV71 TAPE
NORMAL SPEED
RV21
PB (R) LEVEL
RV11
PB (L) LEVEL
MD BOARD (MD (AX), MD (BX)

− Component side −

TC BOARD − Component side −

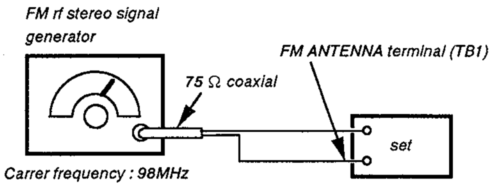

CN401
①PB (L)
②PB(R)
③GND
④REC (L)
⑤REC (R)
RV12
REC BIAS (L)
RV22
REC BIAS (R)
(BX) BOARD
CN302
1
5
RV451
REC LEVEL (R)
RV401
REC LEVEL (L)
TC BOARD

TUNER SECTION

Note : As a front-end (FE1) is difficult to repair if faulty, replace it with new one.

FM Section Adjustments

Setting :


FM rf stereo signal generator
75 Ω coaxial
FM ANTENNA terminal (TB1)
set

Carrer frequency : 98MHz
modulation : 1kHz, 75kHz deviation
(Except German, Italian model)
40kHz deviation
(German, Italian model)

FM Tuned Indication Lighting Level Adjustment

Band : FM

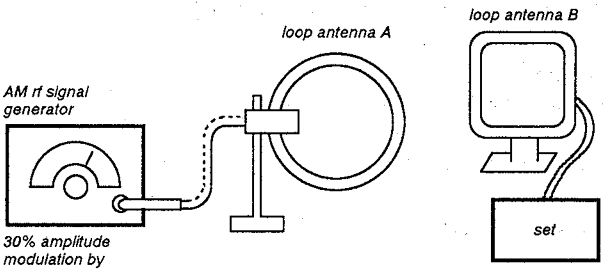
Procedure :

1. German, Italian model :
   Supply a 11μV (21dBμ) 98MHz signal from the ANTENNA terminal.
   Except German, Italian model :
   Supply a 13μV (23dBμ) 98MHz signal from the ANTENNA terminal.
2. Tune the set to 98MHz.
3. Adjust RV1 so that the TUNED light up.
4. German, Italian model :
   Confirm that the TUNED light off with FM RF signal generator output level set at 18 dBμ .
   Except German, Italian model
   Confirm that the TUNED light off with FM RF signal generator output level set at 20 dBμ .

Adjustment Location : Main board

AM Section Adjustment

Setting :


loop antenna A
loop antenna B
AM rf signal generator
set

30% amplitude modulation by 400Hz signal

SW OSC Voltage Adjustment

Band : SW
(E, Australian, Saudi Arabia, Malaysia, Singapore model)

Procedure :

1. Connecct the VOM to JW693 (OSC)
2. Tune the set to 5.95MHz.
3. Adjust T2 for 1.0 to 1.1V reading on the VOM.
4. Tune the set to 17.90MH.
5. Adjust CT2 for 8.4 to 8.6V reading on the VOM.

SW Tracking Adjustment

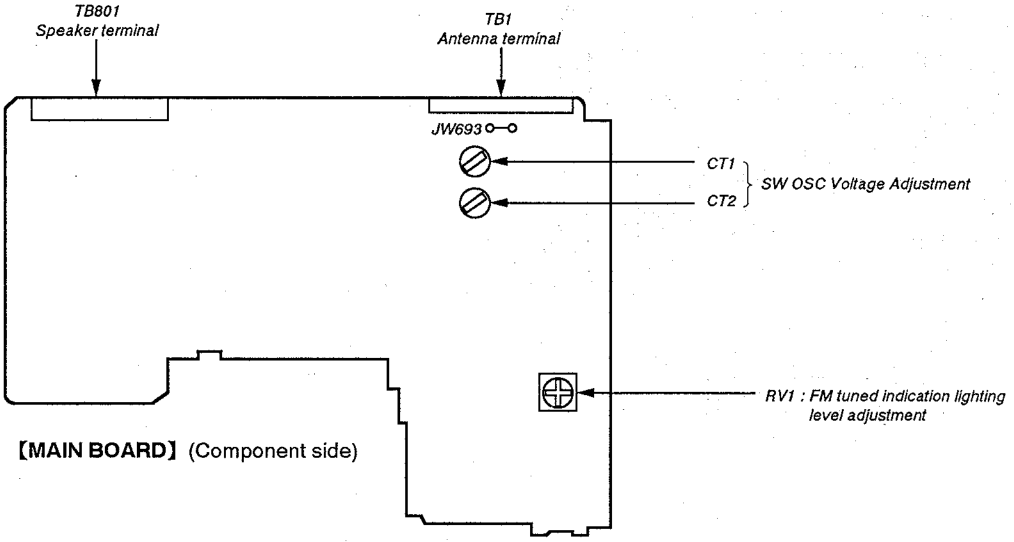
Band : SW

Procedure :

1. Connect the VOM to speaker terminal. (TM801)
2. Adjust for a maximum reading on VOM.

Signal generator and set frequency	Adjustment part
7.0 MHZ	T1
17.0 MHZ	CT1

Adjustment Location : Main board


TB801
Speaker terminal
TB1
Antenna terminal
JW693
CT1
CT2
SW OSC Voltage Adjustment
RV1 : FM tuned indication lighting level adjustment

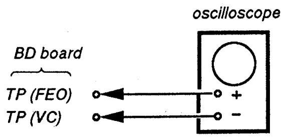
【MAIN BOARD】 (Component side)

CD SECTION

Note :

1. CD Block basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than 10M Ω impedance.
4. Clean an object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

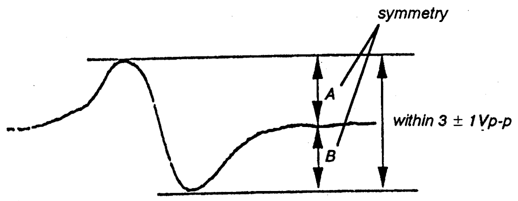
S-Curve Check


oscilloscope
BD board
TP (FEO)
TP (VC)
+
-

Procedure :

1. Connect oscilloscope to test point TP (FEO) and BD board.
2. Connect between test point TP (FES) and TP (VC) by lead wire.
3. Turned Power switch on.
4. Put disc (YEDS-18)in and turned Power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
5. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3 ± 1Vp-p.

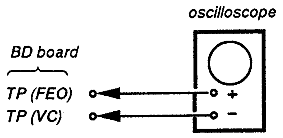
S-curve waveform


symmetry
A
B
within 3 ± 1Vp-p

6. After check, remove the lead wire connected in step 2.

Note : ● Try to measure several times to make sure that the ratio of A : B or B : A is more than 10 : 7.
● Take sweep time as long as possible and light up the brightness to obtain best waveform.

RF Level Check

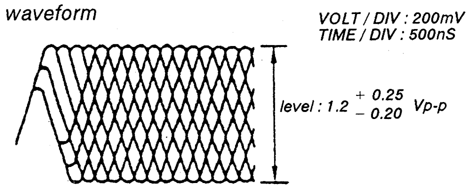

oscilloscope
BD board
TP (FEO)
TP (VC)
+
-

Procedure :

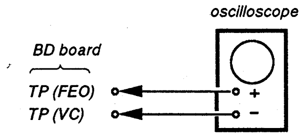
1. Connect oscilloscope to test point TP (RFO) on BD board.
2. Turned Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note :
Clear RF signal waveform means that the shape " ◇ " can be clearly distinguished at the center of the waveform.

RF signal waveform


VOLT / DIV : 200mV
TIME / DIV : 500nS
level : 1.2 +0.25 −0.20 Vp-p

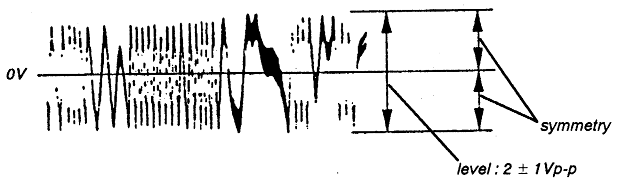
E-F Balance Check


oscilloscope
BD board
TP (FEO)
TP (VC)
+
-

Procedure :

1. Connect test point TP (ADJ) to ground and TP (TES) to TP (VC) with lead wire.
2. Connect oscilloscope to test point TP (TEO) on BD board.
3. Turned Power switch on.
4. Put disc (YEDS-18) in and playback.
5. Confirm that the osilloscope waveform is symmetrical on the top and bottom in relation to 0V, and check this level.

Traverse waveform

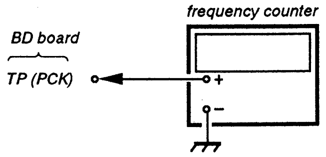

0V
symmetry
level : 2 ± 1Vp-p

6. Remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

1. Connect frequency counter to test point (PCK) with lead wire


frequency counter
BD board
TP (PCK)
+
-

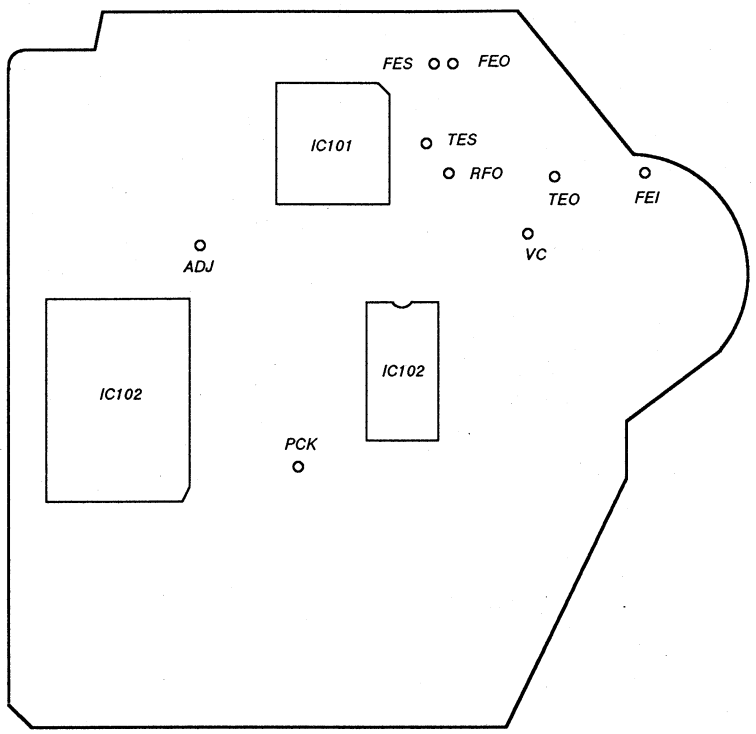
2. Turned Power switch on.
3. Confirm that reading on frequency counter is 4.3218MHz.

Focus/Tracking Gain

This gain has a margin, so even if it is slightly off. There is no problem.
Therefore, do not perform, this adjustment.
Please note that it should be fixed to mechanical center position when you moved and do not know original position.

Adjustment Location :

[BD BOARD] (SIDE B)


FES
FEO
IC101
TES
RFO
TEO
FEI
VC
ADJ
IC102
IC102
PCK

4-1. CIRCUIT

he shape " ◇ " can be
vaveform.

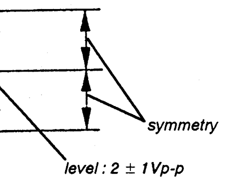
VOLT / DIV : 200mV
TIME / DIV : 500nS

/: 1.2 $^{+0.25}_{-0.20}$ Vp-p

nd and TP (TES) to TP

(TEO) on BD board.

m is symmetrical on the
check this level.


symmetry
level : 2 ± 1Vp-p

ep 1.

nt (PCK) with lead wire

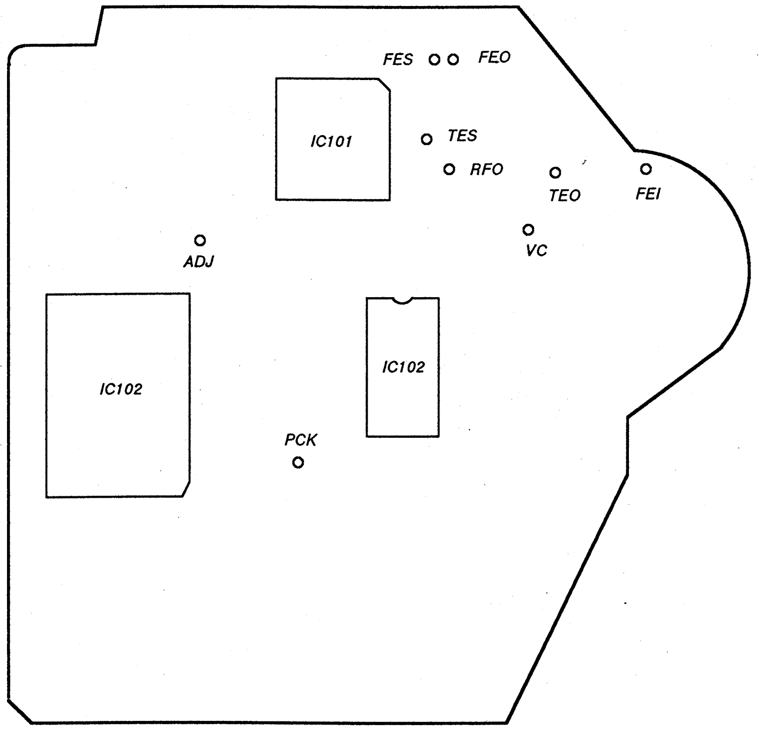
unter is 4.3218MHz.

Focus/Tracking Gain

This gain has a margin, so even if it is slightly off. There is no problem.
Therefore, do not perform, this adjustment.
Please note that it should be fixed to mechanical center position when you moved and do not know original position.

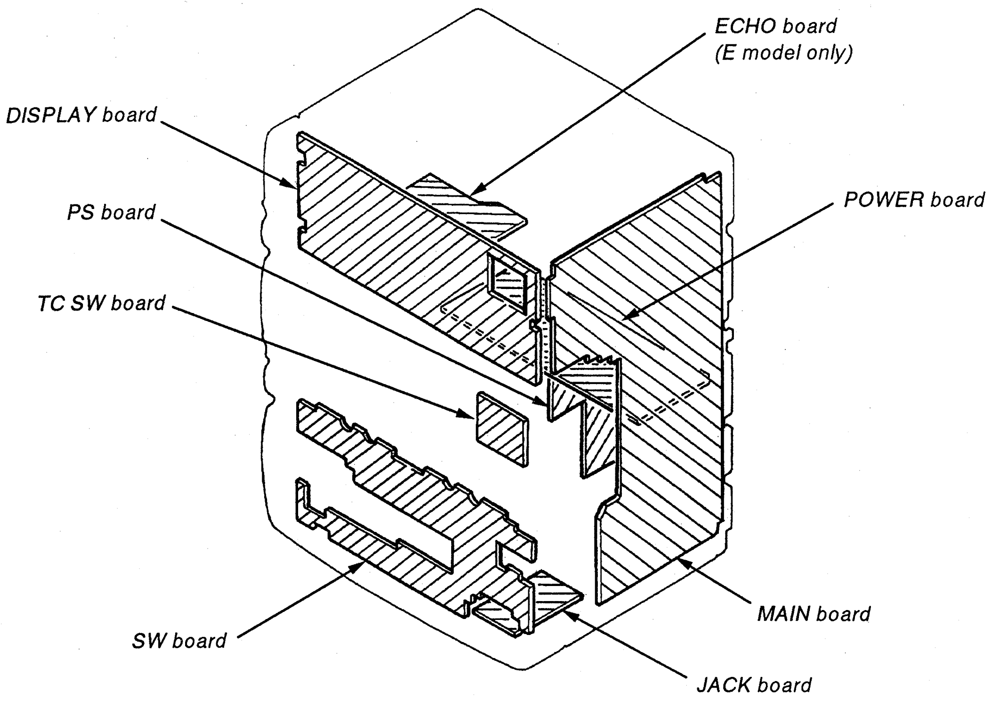
Adjustment Location :

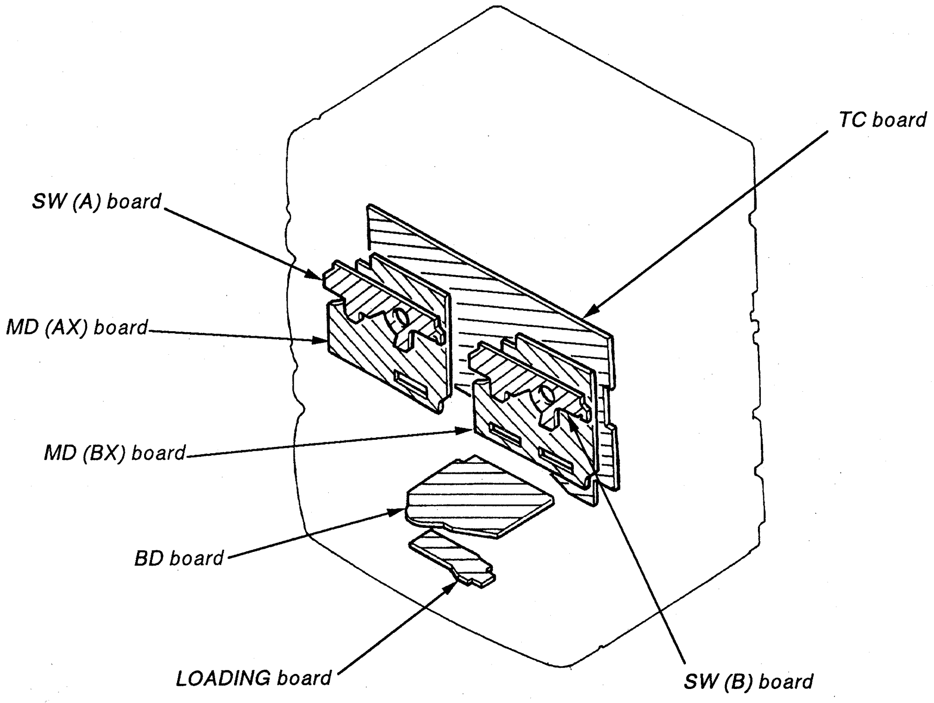
[BD BOARD] (SIDE B)


FES
FEO
IC101
TES
RFO
TEO
FEI
VC
ADJ
IC102
IC102
PCK

SECTION 4
DIAGRAMS

4-1. CIRCUIT BOARD LOCATION


ECHO board
(E model only)
DISPLAY board
PS board
POWER board
TC SW board
MAIN board
SW board
JACK board


TC board
SW (A) board
MD (AX) board
MD (BX) board
BD board
LOADING board
SW (B) board

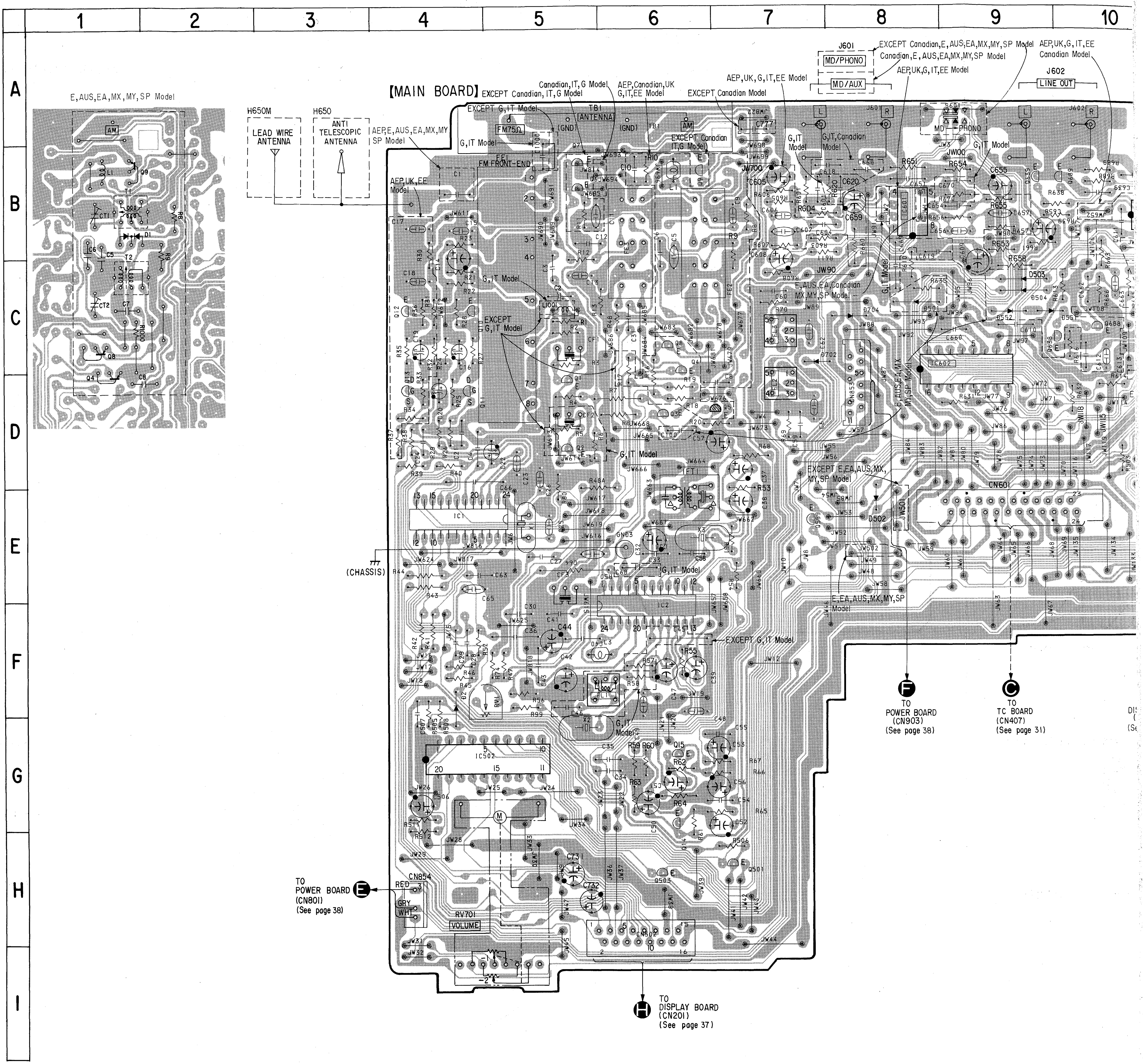
4-2. PRINTED WIRING BOARDS – MAIN SECTION –

- Refer to page 35 for Semiconductor Lead Layouts.

• SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location
D1	B - 1	Q1	D - 5
D2	F - 4	Q2	D - 5
D501	C - 8	Q3	D - 6
D502	E - 8	Q4	C - 6 (D - 1)
D503	C - 9	Q5	D - 7
D504	C - 9	Q6	B - 5
D551	C - 9	Q7	B - 5
D552	C - 9	Q8	C - 6 (C - 1)
D702	C - 7	Q9	B - 6 (B - 1)
D703	C - 13	Q10	C - 4
D704	C - 8	Q11	D - 4
D849	B - 12	Q12	C - 4
D899	B - 12	Q13	D - 4
		Q14	G - 6
		Q15	G - 6
IC1	E - 4		
IC2	F - 6	Q501	H - 7
IC501	D - 12	Q503	H - 6
IC502	G - 4	Q599	E - 7
IC601	B - 8	Q638	C - 10
		Q639	B - 9
IC602	C - 9		
IC603	B - 10	Q688	C - 10
IC605	C - 11	Q689	B - 10
IC606	C - 12	Q701	F - 12
IC701	F - 13	Q702	E - 12
		Q731	D - 12
IC731	D - 13		
IC751	C - 14	Q751	F - 12

( ) : E, AUS, EA, MX, MY, SP Model

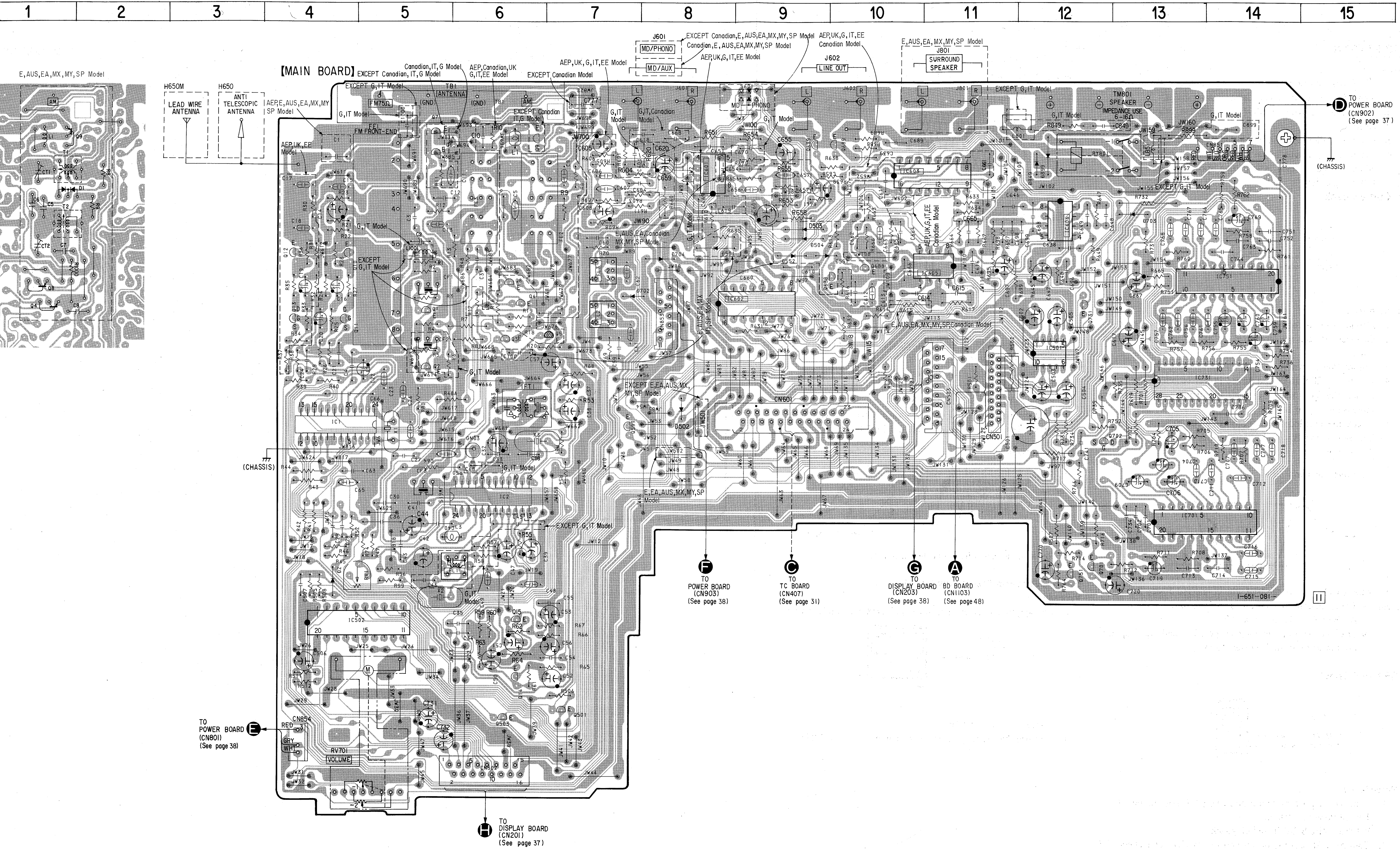

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
I
E,AUS,EA,MX,MY,SP Model
H650M
LEAD WIRE ANTENNA
H650
ANTI TELESCOPIC ANTENNA
AEP,E,AUS,EA,MX,MY,SP Model
[MAIN BOARD]
EXCEPT Canadian, IT,G Model
Canadian,IT,G Model
AEP,Canadian,UK G,IT,EE Model
EXCEPT Canadian Model
AEP,UK,G,IT,EE Model
J601
MD/PHONO
MD/AUX
EXCEPT Canadian,E,AUS,EA,MX,MY,SP Model
Canadian,E,AUS,EA,MX,MY,SP Model
AEP,UK,G,IT,EE Model
AEP,UK,G,IT,EE Canadian Model
J602
LINE OUT
TB1
ANTENNA
FM75Ω
AM
FE1 FM FRONT-END
AEP,UK,EE Model
G,IT Model
EXCEPT G,IT Model
IC1
IC2
IC502
IC602
CN601
CN854
RV701 VOLUME
CN802
(CHASSIS)
EXCEPT G,IT Model
E,EA,AUS,MX,MY,SP Model
EXCEPT E,EA,AUS,MX,MY,SP Model
E,AUS,EA,Canadian MX,MY,SP Model
TO POWER BOARD (CN801) (See page 38)
TO POWER BOARD (CN903) (See page 38)
TO TC BOARD (CN407) (See page 31)
TO DISPLAY BOARD (CN201) (See page 37)

Note:

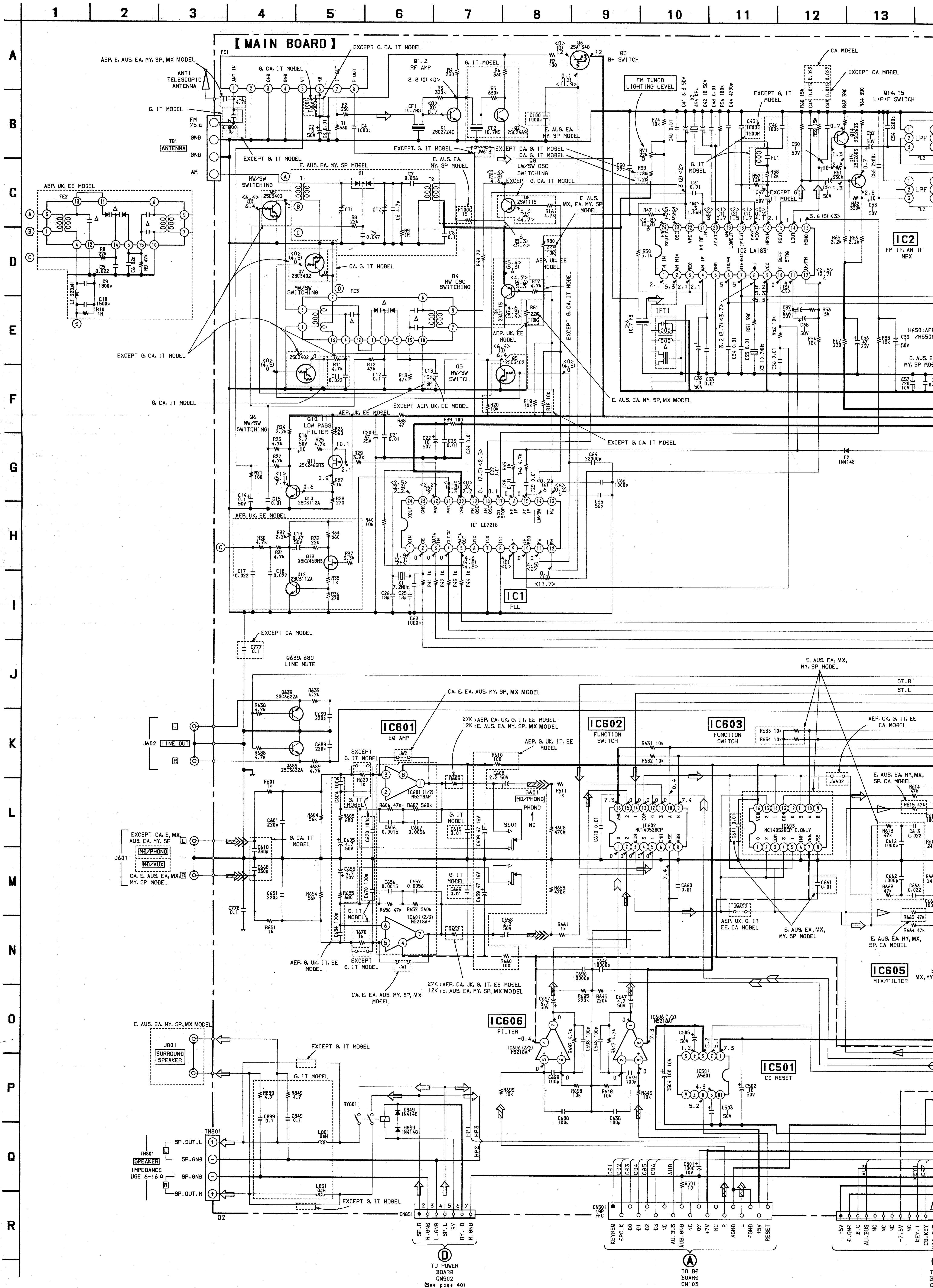
- ○— : parts extracted from the component side.
- ░░ : Pattern on the side which is seen.

- CA : Canadian
EA : Saudi Arabia
EE : East European
IT : Italian
AUS : Australian
G : German
MA : Malaysia
SP : Singapore
MX : Mexican

● Refer to page 35 for Semiconductor Lead Layouts.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
E,AUS,EA,MX,MY,SP Model
H650M
LEAD WIRE ANTENNA
H650
ANTI TELESCOPIC ANTENNA
AEP,E,AUS,EA,MX,MY SP Model
【MAIN BOARD】
EXCEPT Canadian,IT,G Model
Canadian,IT,G Model
AEP,Canadian,UK G,IT,EE Model
AEP,UK,G,IT,EE Model
EXCEPT Canadian Model
J601
MD/PHONO
MD/AUX
EXCEPT Canadian,E,AUS,EA,MX,MY,SP Model
Canadian,E,AUS,EA,MX,MY,SP Model
AEP,UK,G,IT,EE Model
AEP,UK,G,IT,EE Canadian Model
J602
LINE OUT
E,AUS,EA,MX,MY,SP Model
J801
SURROUND SPEAKER
EXCEPT G,IT Model
TB1
ANTENNA
FM75Ω
AM
(GND)
FE1
FM FRONT-END
TM801
SPEAKER
IMPEDANCE USE
6-16Ω
TO POWER BOARD (CN902) (See page 37)
(CHASSIS)
G,IT Model
EXCEPT G,IT Model
AEP,UK,G,IT,EE Canadian Model
E,AUS,EA,Canadian MX,MY,SP Model
E,AUS,EA,MX,MY,SP,Canadian Model
EXCEPT E,EA,AUS,MX,MY,SP Model
E,EA,AUS,MX,MY,SP Model
CN601
IC1
IC2
IC502
IC601
IC602
IC603
IC605
IC606
IC501
IC701
IC731
IC751
CN501
CN502
CN503
CN854
RED
GRY
WHT
RV701
VOLUME
TO POWER BOARD (CN801) (See page 38)
TO POWER BOARD (CN903) (See page 38)
TO TC BOARD (CN407) (See page 31)
TO DISPLAY BOARD (CN203) (See page 38)
TO BD BOARD (CN1103) (See page 48)
TO DISPLAY BOARD (CN201) (See page 37)
1-651-081-
11

4-3. SCHEMATIC DIAGRAM – MAIN SECTION –



1
2
3
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5
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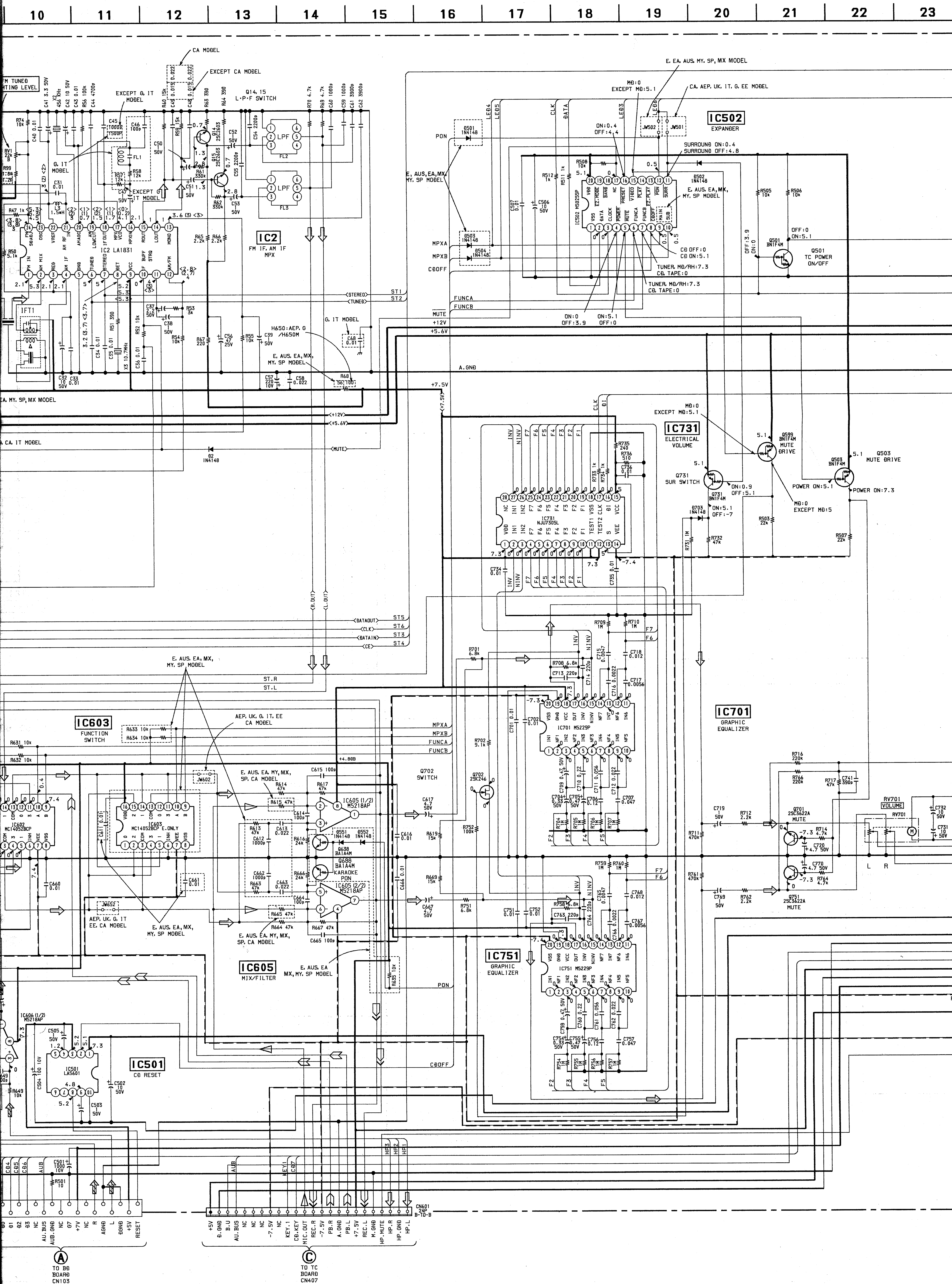
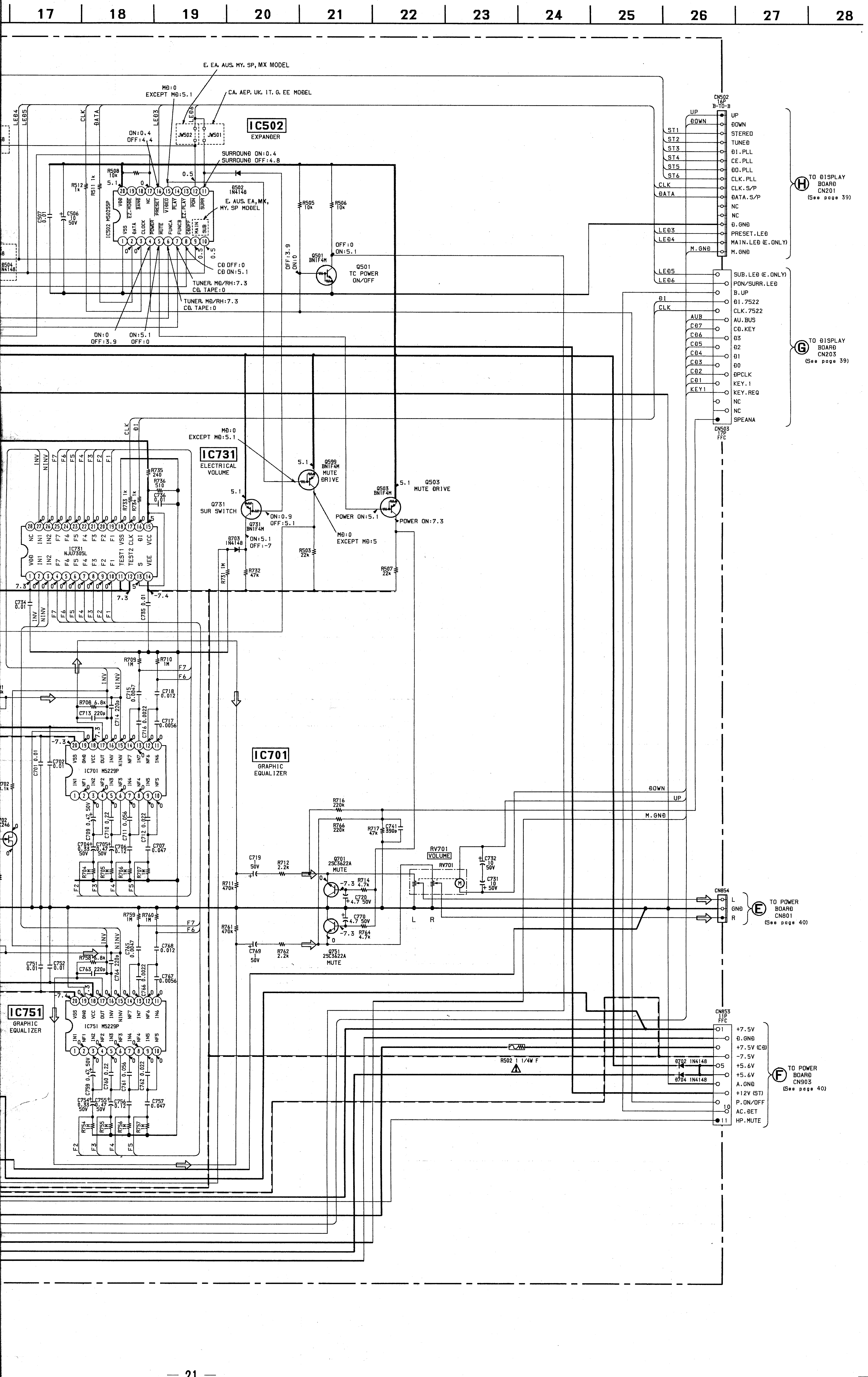
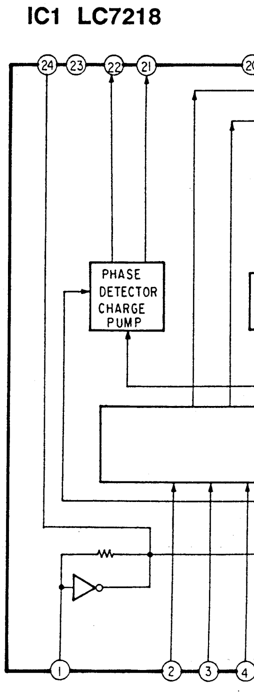
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
【MAIN BOARD】
EXCEPT G, CA, IT MODEL
AEP, E, AUS, EA, MY, SP, MX MODEL
ANT1 TELESCOPIC ANTENNA
G, IT MODEL
FM 75 Ω
GND
AM
TB1 ANTENNA
FE1
G, CA, IT MODEL
Q1, 2 RF AMP
Q3 2SA1348
Q3 B+ SWITCH
FM TUNED LIGHTING LEVEL
EXCEPT G, IT MODEL
CA MODEL
EXCEPT CA MODEL
Q14, 15 L·P·F SWITCH
LPF
FL2
FL3
E, AUS, EA, MY, SP MODEL
Q9 2SC3402
MW/SW SWITCHING
Q8 2SA1115
LW/SW OSC SWITCHING
MX, EA, MY, SP MODEL
AEP, UK, EE MODEL
Q7 2SC3402
CA, G, IT MODEL
Q4 MW OSC SWITCHING
Q4 2SA1115
Q5 MW/SW SWITCH
Q5 2SC3402
Q6 2SC3402
AEP, UK, FE2 MODEL
FE3
EXCEPT G, CA, IT MODEL
G, CA, IT MODEL
IC2 LA1831
IC2 FM IF, AM IF MPX
IFT1
E, AUS, EA, MY, SP, MX MODEL
Q6 MW/SW SWITCHING
Q10, 11 LOW PASS FILTER
Q11 2SK246GR3
Q10 2SC3112A
EXCEPT AEP, UK, EE MODEL
IC1 LC7218
IC1 PLL
X1 7.2MHz
D2 1N4148
Q13 2SK246GR3
Q12 2SC3112A
EXCEPT CA MODEL
Q639, 689 LINE MUTE
Q639 2SC3622A
Q689 2SC3622A
J602 LINE OUT
L
R
IC601 EQ AMP
CA, E, EA, AUS, MY, SP, MX MODEL
27K : AEP, CA, UK, G, IT, EE MODEL
12K : E, AUS, EA, MY, SP, MX MODEL
IC601 (1/2) M5218AP
IC601 (2/2) M5218AP
S601 MD/PHONO
PHONO
MD
IC602 FUNCTION SWITCH
IC602 MC14052BCP
IC603 FUNCTION SWITCH
IC603 MC14052BCP E, ONLY
E, AUS, EA, MX, MY, SP MODEL
AEP, UK, G, IT, EE CA MODEL
E, AUS, EA, MY, SP, CA MODEL
J601
EXCEPT CA, E, MX, AUS, EA, MY, SP
MD/PHONO
MD/AUX
CA, E, AUS, EA, MX, MY, SP MODEL
G, CA, IT MODEL
AEP, G, UK, IT, EE MODEL
EXCEPT G, IT MODEL
AEP, UK, G, IT EE, CA MODEL
E, AUS, EA, MX, MY, SP MODEL
IC605 MIX/FILTER
IC606 FILTER
IC606 (1/2) M5218AP
IC606 (2/2) M5218AP
IC501 CD RESET
IC501 LA5601
E, AUS, EA, MY, SP, MX MODEL
J801 SURROUND SPEAKER
EXCEPT G, IT MODEL
G, IT MODEL
RY801
D849 1N4148
D899 1N4148
TM801
TM801 SPEAKER IMPEDANCE USE 6-16 Ω
SP. OUT. L
SP. GND
SP. GND
SP. OUT. R
CN851
SP. R
R. GND
L. GND
SP. L
RY
RY. +B
M. GND
D TO POWER BOARD CN902 (See page 40)
CN501 19P FFC
KEYREQ
DPCLK
D0
D1
D2
D3
NC
AU. BUS
AUB. GND
NC
D7
+7V
NC
R
AGND
L
DGND
+5V
RESET
A TO BD BOARD CN103 (See page 51)
+5V
D. GND
B. U
AU. BUS
NC
NC
-7.5V
NC
KEY. 1
CD. KEY


10
11
12
13
14
15
16
17
18
19
20
21
22
23
CA MODEL
EXCEPT CA MODEL
Q14, 15
L·P·F SWITCH
EXCEPT G, IT MODEL
FM TUNED
LIGHTING LEVEL
LPF
FL1
FL2
FL3
G, IT MODEL
IC2
FM IF, AM IF
MPX
IC2 LA1831
IFT1
H650: AEP, G
/H650M
E, AUS, EA, MX,
MY, SP MODEL
G, IT MODEL
E, EA, AUS, MY, SP, MX MODEL
MD:0
EXCEPT MD:5.1
CA, AEP, UK, IT, G, EE MODEL
IC502
EXPANDER
IC502 M5025SP
PON
MPXA
MPXB
CDOFF
FUNCA
FUNCB
MUTE
+12V
+5.6V
A.GND
+7.5V
SURROUND ON:0.4
SURROUND OFF:4.8
CD OFF:0
CD ON:5.1
TUNER, MD/RH:7.3
CD, TAPE:0
ON:0.4
OFF:4.4
ON:0
OFF:3.9
ON:5.1
OFF:0
Q501
TC POWER
ON/OFF
IC731
ELECTRICAL
VOLUME
IC731
NJU7305L
Q731
SUR SWITCH
Q599
MUTE
DRIVE
Q503
MUTE DRIVE
POWER ON:5.1
POWER ON:7.3
MD:0
EXCEPT MD:5
ST1
ST2
ST3
ST4
ST5
ST6
DATAOUT
CLK
DATAIN
CE
STEREO
TUNED
ST.R
ST.L
R.OUT
L.OUT
IC603
FUNCTION
SWITCH
MC14052BCP
IC603
MC14052BCP E. ONLY
AEP, UK, G, IT, EE
CA MODEL
E, AUS, EA, MX,
MY, SP MODEL
AEP, UK, G, IT
EE, CA MODEL
IC605
MIX/FILTER
IC605 (1/2)
M5218AP
IC605 (2/2)
M5218AP
Q638
BA1A4M
Q688
BA1A4M
KARAOKE
PON
Q702
SWITCH
Q702
2SK246
IC701
GRAPHIC
EQUALIZER
IC701 M5229P
IC751
GRAPHIC
EQUALIZER
IC751 M5229P
Q701
2SC3622A
MUTE
Q751
2SC3622A
MUTE
RV701
VOLUME
L
R
IC606 (1/2)
M5218AP
IC501
CD RESET
IC501
LA5601
CN601
24P
B-TO-B
+5V
D.GND
B.U
AU.BUS
NC
-7.5V
KEY.1
CD.KEY
MIC.OUT
REC.R
PB.R
A.GND
PB.L
+7.5V
REC.L
M.GND
HP.MUTE
HP.GND
HP.L
AU.BUS
AU.GND
+7V
R
AGND
L
DGND
RESET
Ⓐ
TO BD
BOARD
CN103
(See page 51)
Ⓒ
TO TC
BOARD
CN407
(See page 27)

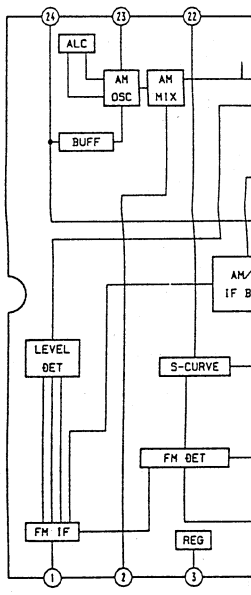

17
18
19
20
21
22
23
24
25
26
27
28
E, EA, AUS, MY, SP, MX MODEL
MD:0
EXCEPT MD:5.1
CA, AEP, UK, IT, G, EE MODEL
IC502
EXPANDER
JW502
JW501
ON:0.4
OFF:4.4
SURROUND ON:0.4
SURROUND OFF:4.8
D502
1N4148
E, AUS, EA, MX,
MY, SP MODEL
IC502 M5025SP
R508 10k
R512 1k
R511 1k
C507 0.01
C506 10 50V
D504 1N4148
CD OFF:0
CD ON:5.1
TUNER, MD/RH:7.3
CD, TAPE:0
ON:0
OFF:3.9
ON:5.1
OFF:0
R505 10k
R506 10k
OFF:3.9
ON:0
OFF:0
ON:5.1
Q501 BN1F4M
Q501
TC POWER
ON/OFF
CN502 16P B-TO-B
UP
DOWN
STEREO
TUNED
DI.PLL
CE.PLL
DO.PLL
CLK.PLL
CLK.S/P
DATA.S/P
NC
D.GND
PRESET.LED
MAIN.LED (E.ONLY)
M.GND
TO DISPLAY BOARD CN201 (See page 39)
H
SUB.LED (E.ONLY)
PON/SURR.LED
B.UP
DI.7522
CLK.7522
AU.BUS
CD.KEY
D3
D2
D1
D0
DPCLK
KEY.1
KEY.REQ
SPEANA
CN503 17P FFC
TO DISPLAY BOARD CN203 (See page 39)
G
MD:0
EXCEPT MD:5.1
IC731
ELECTRICAL VOLUME
Q599 BN1F4M
MUTE DRIVE
Q503 BN1F4M
Q503
MUTE DRIVE
Q731
SUR SWITCH
Q731 BN1F4M
ON:0.9
OFF:5.1
D703 1N4148
ON:5.1
OFF:-7
POWER ON:5.1
POWER ON:7.3
MD:0
EXCEPT MD:5
R503 22k
R507 22k
R732 47k
R731 1M
R735 240
R736 510
C736 0.01
R733 1k
R734 1k
IC731 NJU7305L
C734 0.01
C735 0.01
R709 1M
R710 1M
R708 6.8k
C713 220p
C714 220p
C715 0.0047
C718 0.012
C716 0.0022
C717 0.0056
IC701
GRAPHIC EQUALIZER
IC701 M5229P
C701 0.01
C702 0.01
C704 0.33 50V
C705 0.47 50V
C706 0.12
C707 0.047
R716 220k
R766 220k
R717 47k
C741 390p
C719 1 50V
R712 2.2k
Q701 2SC3622A
MUTE
R711 470k
R714 4.7k
C720 4.7 50V
RV701 VOLUME
C732 10 50V
C731 10 50V
CN854
L
GND
R
TO POWER BOARD CN801 (See page 40)
E
C770 4.7 50V
R764 4.7k
R761 470k
C769 1 50V
R762 2.2k
Q751 2SC3622A
MUTE
R759 1M
R760 1M
R758 6.8k
C763 220p
C764 220p
C765 0.0047
C768 0.012
C766 0.0022
C767 0.0056
C751 0.01
C752 0.01
IC751
GRAPHIC EQUALIZER
IC751 M5229P
C754 0.33 50V
C755 0.47 50V
C756 0.12
C757 0.047
R502 1 1/4W F
CN853 11P FFC
+7.5V
D.GND
+7.5V (CD)
-7.5V
+5.6V
A.GND
+12V (ST)
P.ON/OFF
AC.DET
HP.MUTE
D702 1N4148
D704 1N4148
TO POWER BOARD CN903 (See page 40)
F

• IC BLOCK DIAGRAM

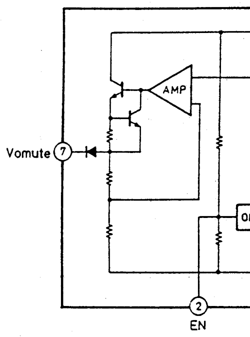
IC1 LC7218


PHASE DETECTOR CHARGE PUMP

IC2 LA1831


ALC
AM OSC
AM MIX
BUFF
LEVEL DET
S-CURVE
FM DET
FM IF
REG

IC501 LA5601


AMP
Vomute
EN

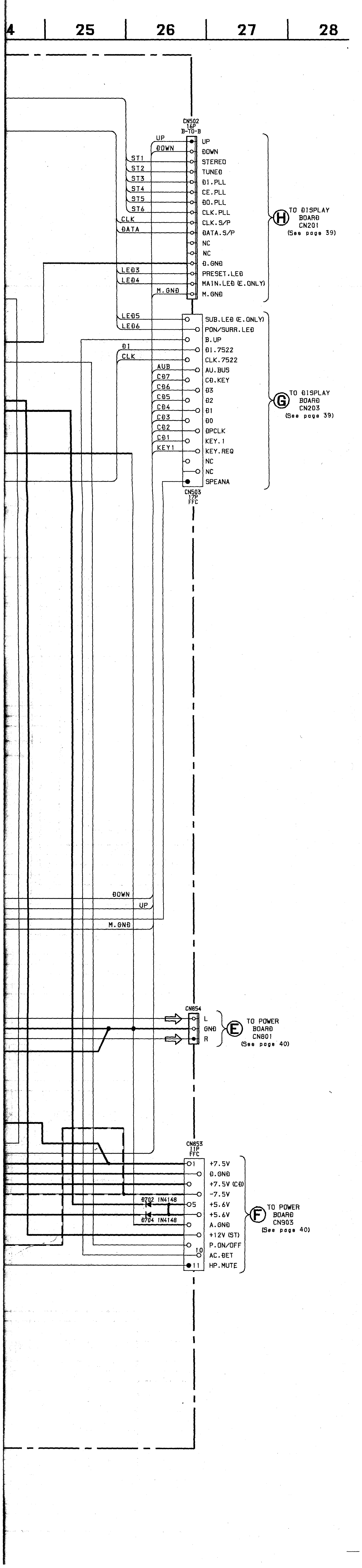
Note :

- All capacitors are in μ F unle
50WV or less are not indicate
tantalums.
- All resistors are in Ω and ¼V
specified.
- % : indicates tolerance.
- △ : internal component.

Note :	No
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Le un po Ne piè fié.

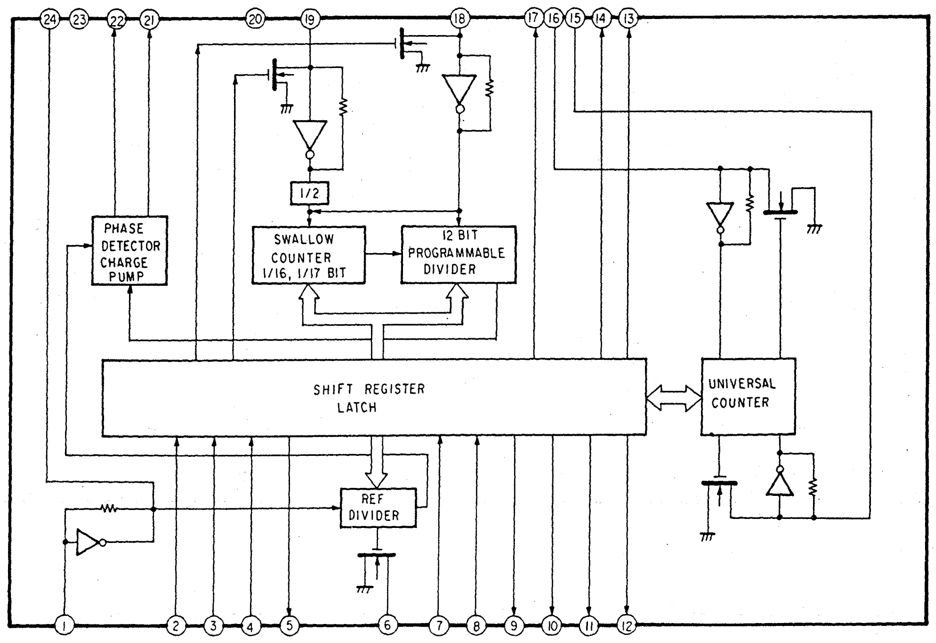
- ▬▬ : B+ Line
- ▬ ▬ ▬ : B − Line
- ☐ : adjustment for rep
- Voltage and waveforms are d
no-signal (detuned) conditio
no mark : FM (RADIO SECT
( ) : AM (MW) (RADIO
〈 〉 : LW/LW (RADIO SI
no mark : PLAYBACK (AUDI
( ) : REC (AUDIO SECT
- Voltages are taken with a VO
Voltage variations may be no
tolerances.
- Signal path.
⇨ : FM ⊃ : PB (DE
⇨ : REC (D
▷ : MIC

- CA : Canadian
EA : Saudi Arabia
EE : East European
IT : Italian
AUS : Australian
G : German
MA : Malaysia
SP : Singapore
MX : Mexican

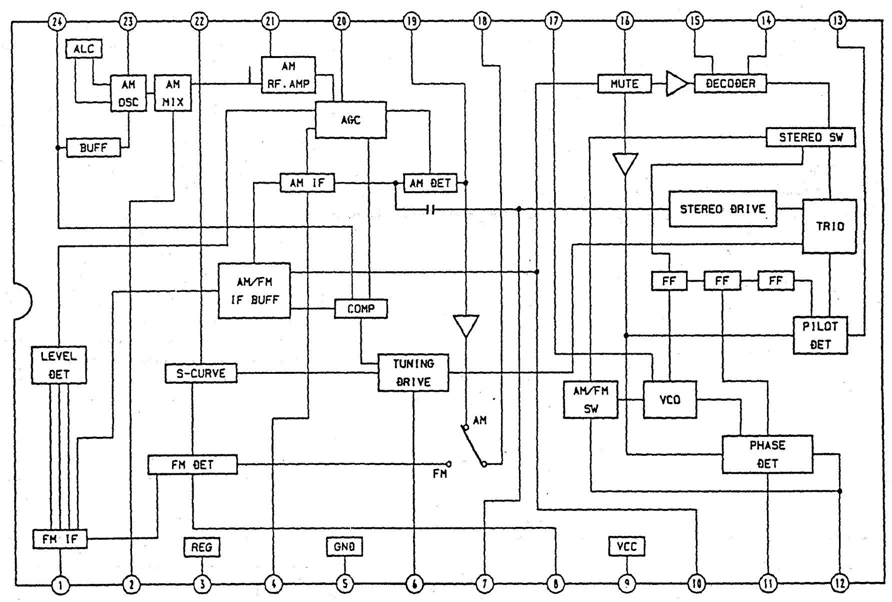

4
25
26
27
28
CN502
16P
B-TO-B
UP
DOWN
ST1
ST2
ST3
ST4
ST5
ST6
CLK
DATA
LED3
LED4
M.GND
UP
DOWN
STEREO
TUNED
DI.PLL
CE.PLL
DO.PLL
CLK.PLL
CLK.S/P
DATA.S/P
NC
NC
D.GND
PRESET.LED
MAIN.LED (E.ONLY)
M.GND
H
TO DISPLAY BOARD CN201 (See page 39)
LED5
LED6
DI
CLK
AUB
CD7
CD6
CD5
CD4
CD3
CD2
CD1
KEY1
SUB.LED (E.ONLY)
PON/SURR.LED
B.UP
DI.7522
CLK.7522
AU.BUS
CD.KEY
D3
D2
D1
D0
DPCLK
KEY.1
KEY.REQ
NC
NC
SPEANA
CN503
17P
FFC
G
TO DISPLAY BOARD CN203 (See page 39)
DOWN
UP
M.GND
CN854
L
GND
R
E
TO POWER BOARD CN801 (See page 40)
CN853
11P
FFC
+7.5V
D.GND
+7.5V (CD)
-7.5V
+5.6V
+5.6V
A.GND
+12V (ST)
P.ON/OFF
AC.DET
HP.MUTE
D702 1N4148
D704 1N4148
F
TO POWER BOARD CN903 (See page 40)

• IC BLOCK DIAGRAMS – MAIN SECTION –

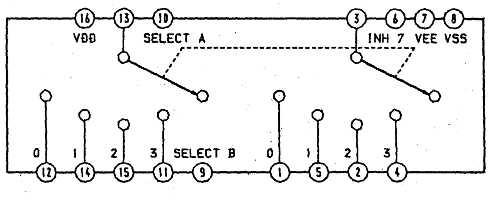
IC1 LC7218


PHASE DETECTOR CHARGE PUMP
1/2
SWALLOW COUNTER 1/16, 1/17 BIT
12 BIT PROGRAMMABLE DIVIDER
SHIFT REGISTER LATCH
UNIVERSAL COUNTER
REF DIVIDER

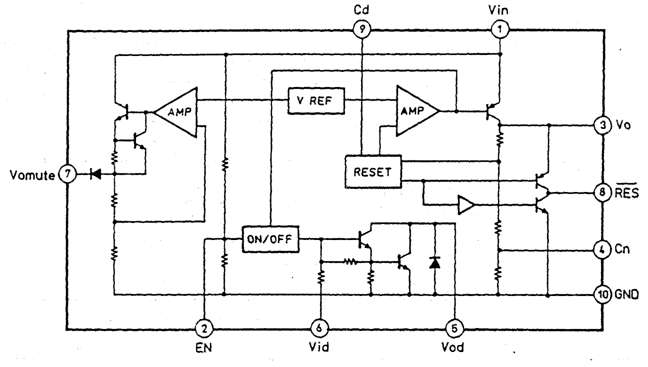
IC2 LA1831


ALC
AM OSC
AM MIX
AM RF.AMP
BUFF
AGC
AM IF
AM DET
MUTE
DECODER
STEREO SW
STEREO DRIVE
TRIG
AM/FM IF BUFF
COMP
FF
FF
FF
PILOT DET
LEVEL DET
S-CURVE
TUNING DRIVE
AM
AM/FM SW
VCO
FM DET
FM
PHASE DET
FM IF
REG
GND
VCC

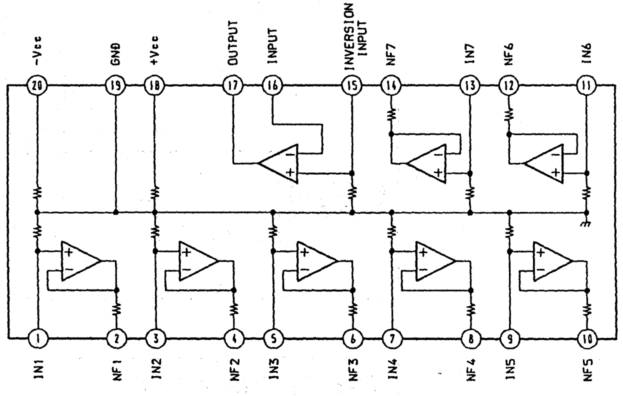
IC602, 603 MC14052BCP


VDD
SELECT A
INH
7
VEE
VSS
0
1
2
3
SELECT B
0
1
2
3

IC501 LA5601


Cd
Vin
AMP
V REF
AMP
Vo
Vomute
RESET
RES
ON/OFF
Cn
GND
EN
Vid
Vod

IC701, 751 M5229P


-Vcc
GND
+Vcc
OUTPUT
INPUT
INVERSION INPUT
NF7
IN7
NF6
IN6
IN1
NF1
IN2
NF2
IN3
NF3
IN4
NF4
IN5
NF5

Note :

- All capacitors are in μ F unless otherwise noted. pF: μ μ F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Note : Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

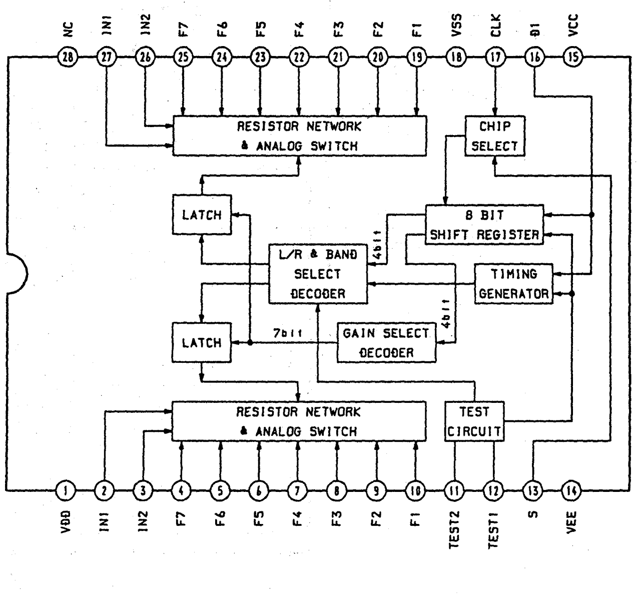
- ▬▬ : B+ Line
- ▬ ▬ ▬ : B − Line
- ☐ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.

  no mark : FM (RADIO SECTION)
  ( ) : AM (MW) (RADIO SECTION)
  〈 〉 : LW/LW (RADIO SECTION)
  no mark : PLAYBACK (AUDIO SECTION)
  ( ) : REC (AUDIO SECTION)
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Signal path.

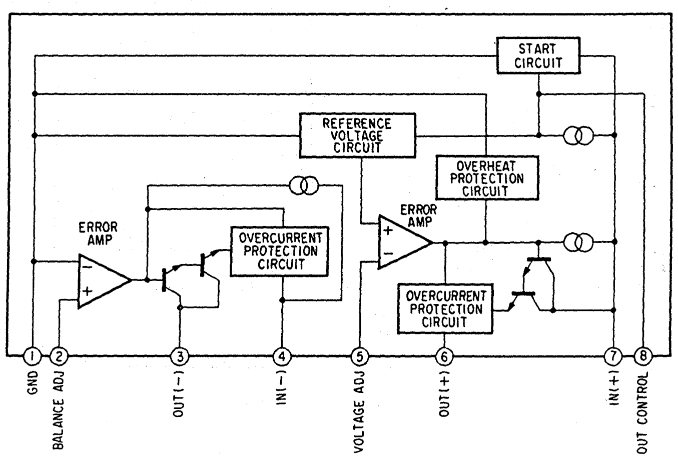
  ⇨ : FM
  ⇨ : PB (DECK A)
  ⇨ : REC (DECK B)
  ▷ : MIC
  ⇨ : CD
  ⇨ : PHONO

- CA : Canadian
  EA : Saudi Arabia
  EE : East European
  IT : Italian
  AUS : Australian
  G : German
  MA : Malaysia
  SP : Singapore
  MX : Mexican

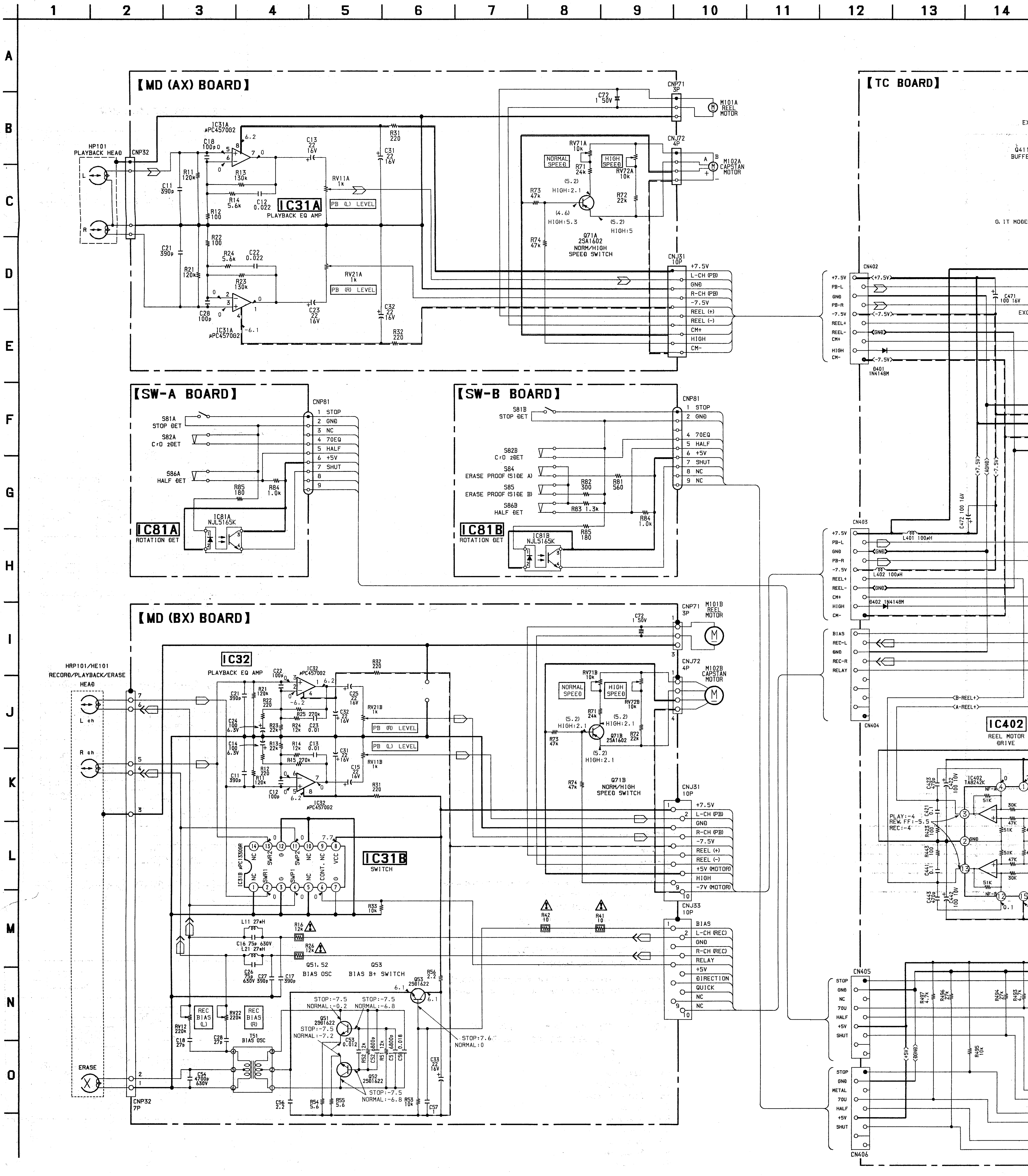
IC731 NJU7305L


NC
IN1
IN2
F7
F6
F5
F4
F3
F2
F1
VSS
CLK
DI
VCC
RESISTOR NETWORK & ANALOG SWITCH
CHIP SELECT
LATCH
8 BIT SHIFT REGISTER
L/R & BAND SELECT DECODER
TIMING GENERATOR
4bit
4bit
LATCH
7bit
GAIN SELECT DECODER
RESISTOR NETWORK & ANALOG SWITCH
TEST CIRCUIT
VDD
IN1
IN2
F7
F6
F5
F4
F3
F2
F1
TEST2
TEST1
S
VEE

IC901 M52301


START CIRCUIT
REFERENCE VOLTAGE CIRCUIT
OVERHEAT PROTECTION CIRCUIT
ERROR AMP
OVERCURRENT PROTECTION CIRCUIT
ERROR AMP
OVERCURRENT PROTECTION CIRCUIT
GND
BALANCE ADJ
OUT(−)
IN(−)
VOLTAGE ADJ
OUT(+)
IN(+)
OUT CONTROL

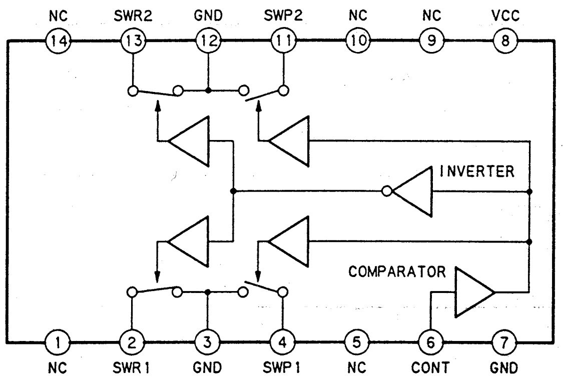
4-4. SCHEMATIC DIAGRAM – DECK SECTION –



【MD (AX) BOARD】
HP101 PLAYBACK HEAD
CNP32
IC31A μPC4570G2
IC31A PLAYBACK EQ AMP
PB (L) LEVEL
PB (R) LEVEL
RV11A 1k
RV21A 1k
CNP71 3P
M101A REEL MOTOR
CNJ72 4P
M102A CAPSTAN MOTOR
NORMAL SPEED
HIGH SPEED
RV71A 10k
RV72A 10k
Q71A 2SA1602 NORM/HIGH SPEED SWITCH
CNJ31 10P
+7.5V
L-CH (PB)
GND
R-CH (PB)
-7.5V
REEL (+)
REEL (–)
CM+
HIGH
CM-
【SW-A BOARD】
S81A STOP DET
S82A CrO 2DET
S86A HALF DET
IC81A NJL5165K
IC81A ROTATION DET
CNP81
1 STOP
2 GND
3 NC
4 70EQ
5 HALF
6 +5V
7 SHUT
【SW-B BOARD】
S81B STOP DET
S82B CrO 2DET
S84 ERASE PROOF (SIDE A)
S85 ERASE PROOF (SIDE B)
S86B HALF DET
IC81B NJL5165K
IC81B ROTATION DET
8 NC
9 NC
【MD (BX) BOARD】
HRP101/HE101 RECORD/PLAYBACK/ERASE HEAD
L ch
R ch
ERASE
IC32
PLAYBACK EQ AMP
IC32 μPC4570G2
PB (R) LEVEL
PB (L) LEVEL
IC31B μPC1330HA
IC31B SWITCH
M101B REEL MOTOR
M102B CAPSTAN MOTOR
Q71B 2SA1602
Q71B NORM/HIGH SPEED SWITCH
+5V (MOTOR)
-7V (MOTOR)
CNJ33 10P
BIAS
L-CH (REC)
R-CH (REC)
RELAY
DIRECTION
QUICK
Q51, 52 BIAS OSC
Q53 BIAS B+ SWITCH
REC BIAS (L)
REC BIAS (R)
T51 BIAS OSC
STOP:-7.5 NORMAL:-0.2
STOP:-7.5 NORMAL:-6.8
STOP:7.6 NORMAL:0
CNP32 7P
【TC BOARD】
CN402
CN403
CN404
CN405
CN406
D401 1N4148M
D402 1N4148M
L401 100μH
L402 100μH
IC402 REEL MOTOR DRIVE
IC402 TA8242K
PLAY:-4 REW, FF:-5.5 REC:-4

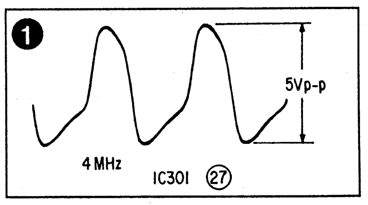
• IC BLOCK DIAGRAMS – DECK SECTION –

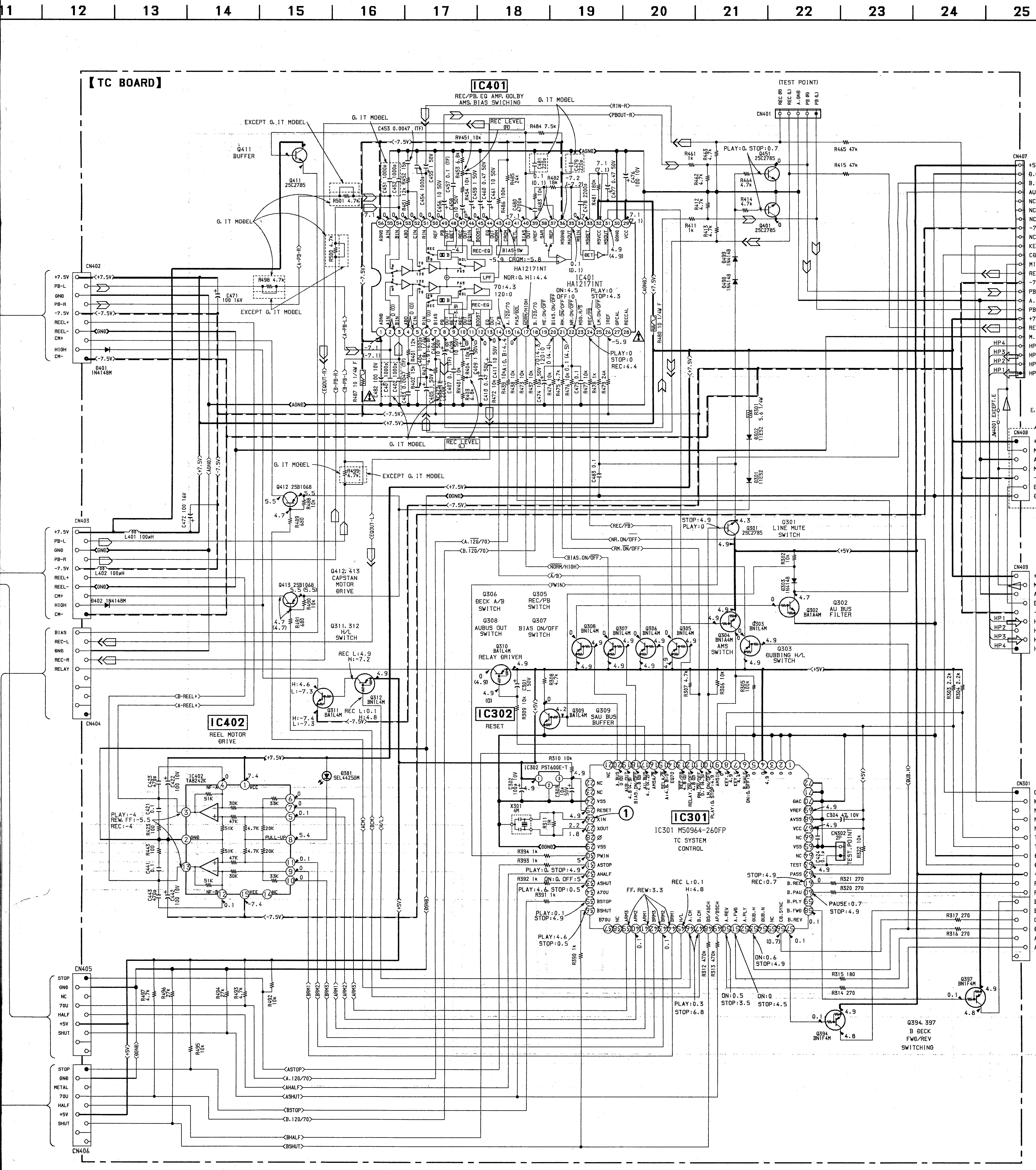
IC31B μPC1330GR



NC 14
SWR2 13
GND 12
SWP2 11
NC 10
NC 9
VCC 8
INVERTER
COMPARATOR
1 NC
2 SWR1
3 GND
4 SWP1
5 NC
6 CONT
7 GND

• WAVEFORMS





11
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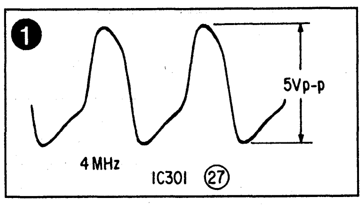
23
24
25
【TC BOARD】
IC401
REC/PB EQ AMP, DOLBY AMS, BIAS SWICHING
IC401 HA12171NT
G. IT MODEL
EXCEPT G. IT MODEL
Q411 BUFFER
Q411 2SC2785
REC LEVEL (R)
REC LEVEL (L)
CN401
(TEST POINT)
CN402
CN403
CN404
CN405
CN406
CN407
CN408
CN409
CN301
Q412 2SB1068
Q413 2SB1068
Q412, 413 CAPSTAN MOTOR DRIVE
Q311, 312 H/L SWITCH
IC402
REEL MOTOR DRIVE
IC402 TA8242K
Q301 LINE MUTE SWITCH
Q302 AU BUS FILTER
Q303 DUBBING H/L SWITCH
Q304 AMS SWITCH
Q305 REC/PB SWITCH
Q306 DECK A/B SWITCH
Q307 BIAS ON/OFF SWITCH
Q308 AUBUS OUT SWITCH
Q309 SAU BUS BUFFER
Q310 RELAY DRIVER
IC302
RESET
IC302 PST600E-T
IC301
IC301 M50964-260FP
TC SYSTEM CONTROL
X301 4M
Q394, 397 B DECK FWD/REV SWITCHING
D381 SEL4425GM
D401 1N4148M
D402 1N4148M
L401 100μH
L402 100μH

• WAVEFORMS



Note :

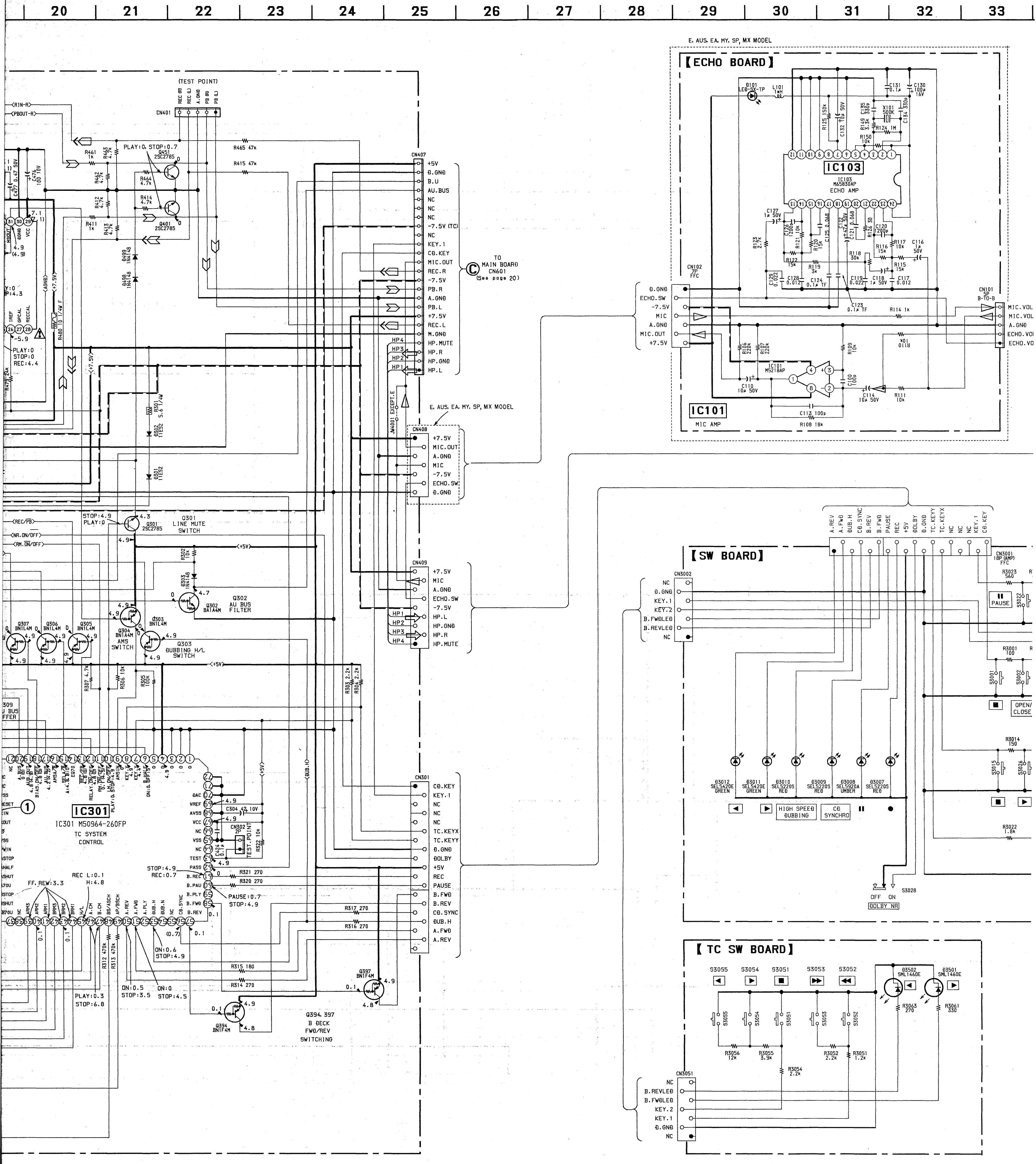
- All capacitors are in μ F unless otherwise noted. pF: μ μ F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬▬ : B+ Line
- ▬ ▬ ▬ : B − Line
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : PLAYBACK (AUDIO SECTION)
  (   ) : REC (AUDIO SECTION)
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.

- Sign
  ⇨

- CA
  EA
  EE
  IT
  AUS
  G
  MA
  SP
  MX


20
21
22
23
24
25
26
27
28
29
30
31
32
33
(TEST POINT)
CN401
REC (R)
REC (L)
A.GND
PB (R)
PB (L)
PLAY:0, STOP:0.7
Q451 2SC2785
Q401 2SC2785
R465 47k
R415 47k
CN407
+5V
D.GND
B.U
AU.BUS
NC
-7.5V (TC)
KEY.1
CD.KEY
MIC.OUT
REC.R
-7.5V
PB.R
A.GND
PB.L
+7.5V
REC.L
M.GND
HP.MUTE
HP.R
HP.GND
HP.L
TO MAIN BOARD CN601 (See page 20)
E. AUS. EA. MY. SP. MX MODEL
CN408
MIC.OUT
ECHO.SW
CN409
MIC
HP1
HP2
HP3
HP4
STOP:4.9
PLAY:0
Q301 2SC2785
Q301 LINE MUTE SWITCH
Q302 BA1A4M
Q302 AU BUS FILTER
Q304 BN1A4M
Q304 AMS SWITCH
Q303 BN1L4M
Q303 DUBBING H/L SWITCH
Q305 BN1L4M
Q306 BN1L4M
Q307 BN1L4M
IC301
IC301 M50964-260FP
TC SYSTEM CONTROL
CN302 2P
TEST POINT
CN301
CD.KEY
KEY.1
TC.KEYX
TC.KEYY
D.GND
DOLBY
+5V
REC
PAUSE
B.FWD
B.REV
CD.SYNC
DUB.H
A.FWD
A.REV
Q394 BN1F4M
Q397 BN1F4M
Q394, 397 B DECK FWD/REV SWITCHING
【ECHO BOARD】
IC103
IC103 M65830AP ECHO AMP
D101 LED-SX-TP
CN102 7P FFC
D.GND
ECHO.SW
MIC
A.GND
MIC.OUT
IC101
IC101 M5218AP
MIC AMP
CN101 5P B-TO-B
MIC.VOL
A.GND
ECHO.VOL
【SW BOARD】
CN3002
CN3001 18P (AMP) FFC
KEY.2
B.FWDLED
B.REVLED
PAUSE
OPEN/CLOSE
D3012 SEL5420E GREEN
D3011 SEL5420E GREEN
D3010 SEL5220S RED
D3009 SEL5220S RED
D3008 SEL5920A UMBER
D3007 SEL5220S RED
HIGH SPEED DUBBING
CD SYNCHRO
S3028
OFF ON
DOLBY NR
【TC SW BOARD】
S3055
S3054
S3051
S3053
S3052
D3502 SML1460E
D3501 SML1460E
CN3051

μ F unless otherwise noted. pF: μ μ F
t indicated except for electrolytics and

and ¼W or less unless otherwise

nce.

onent.

nti-
lot-

art

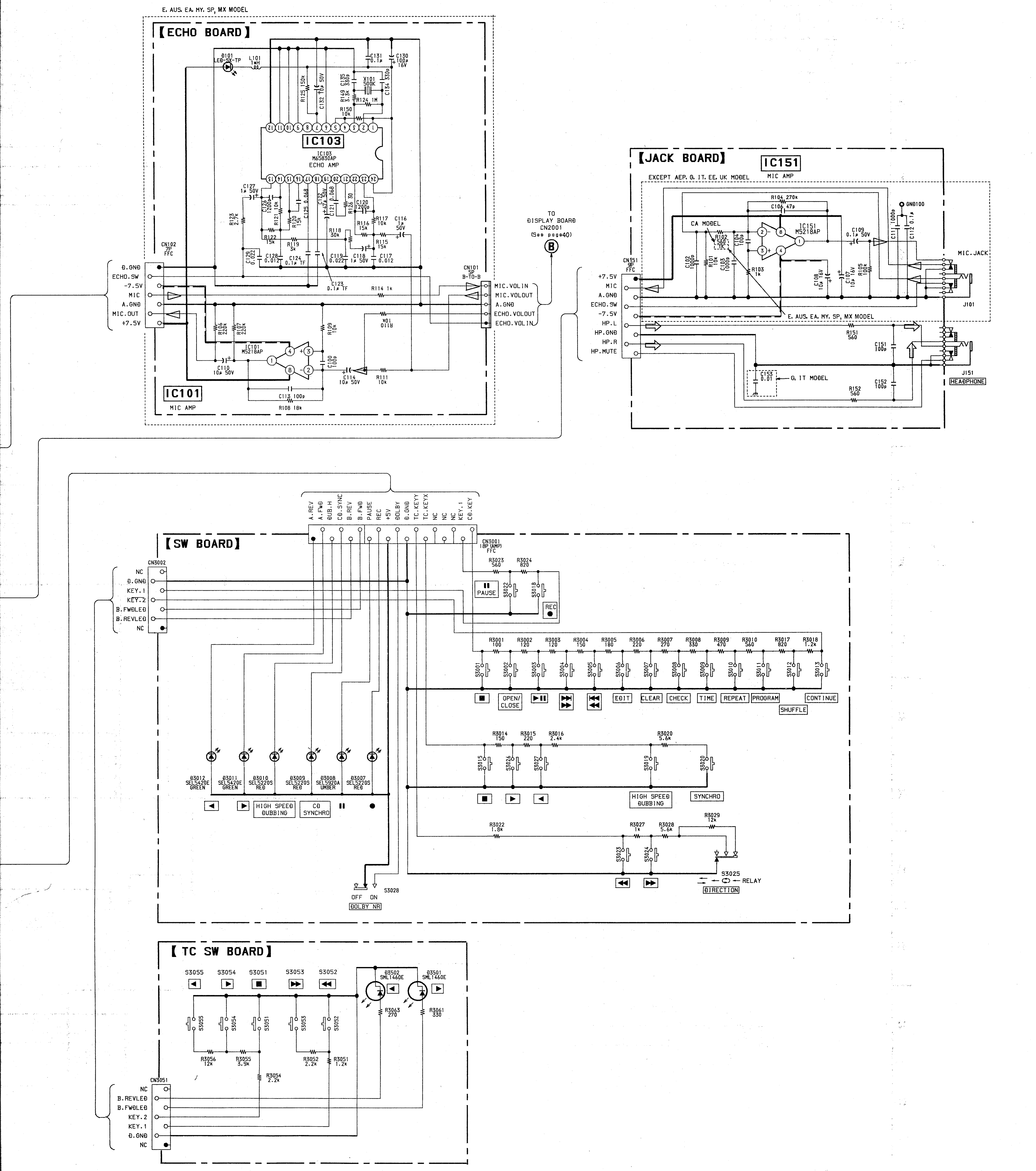
Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬▬ : B+ Line
- ▬ ▬ ▬ : B – Line
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  - no mark : PLAYBACK (AUDIO SECTION)
  - (   ) : REC (AUDIO SECTION)
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.

- Signal path.
  - ⇨ : FM
  - ⊃ : PB (DECK A)
  - ⊐⟩ : REC (DECK B)
  - ⊐ : PB (DECK B)
  - ▷ : MIC

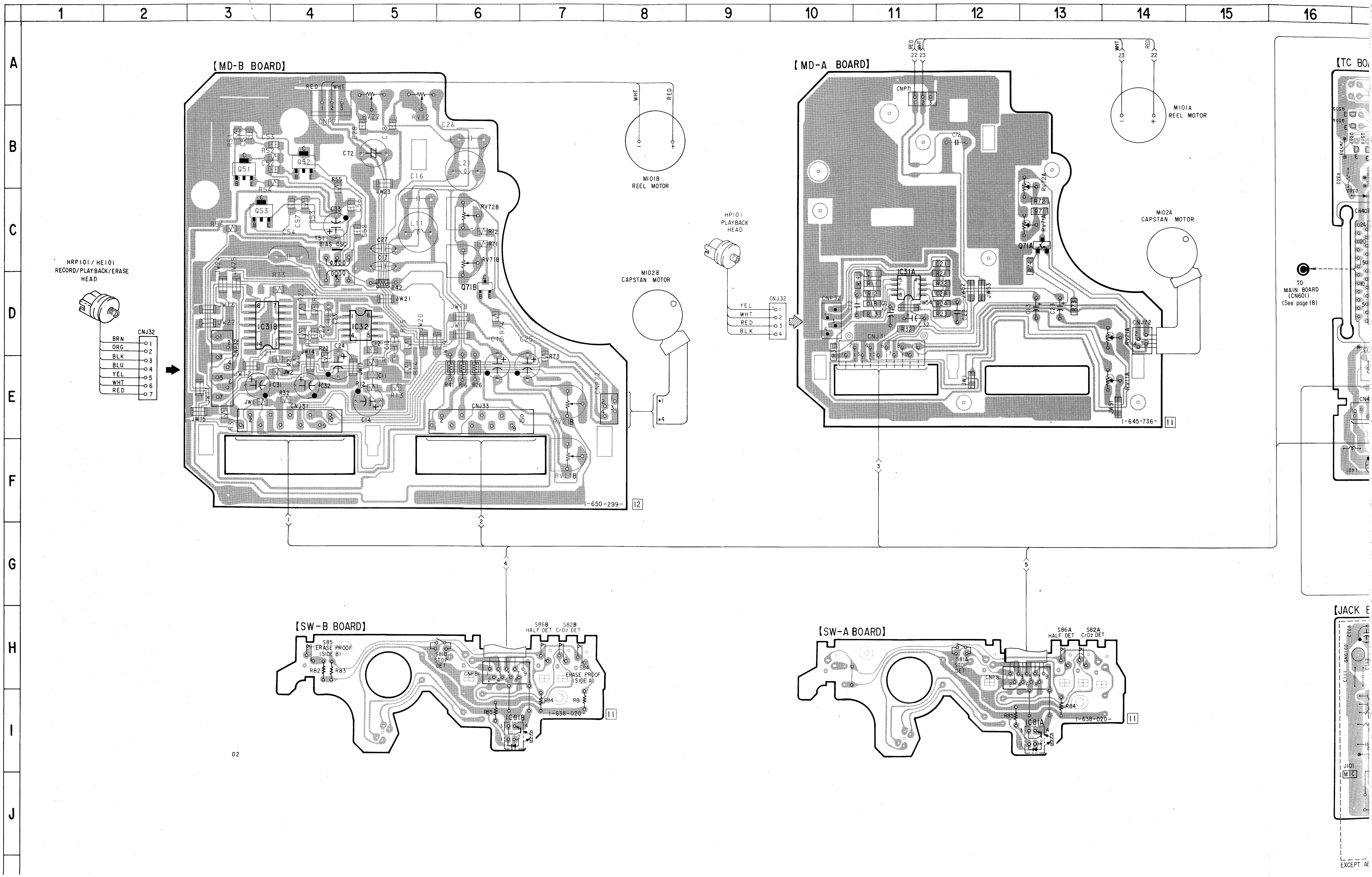
- CA : Canadian
- EA : Saudi Arabia
- EE : East European
- IT : Italian
- AUS : Australian
- G : German
- MA : Malaysia
- SP : Singapore
- MX : Mexican

27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40


E. AUS. EA. MY. SP, MX MODEL
【ECHO BOARD】
D101 LED-SX-TP
L101 1mH
C131 0.1μ
C130 100μ 16V
R125 150k
C132 10μ 50V
C135 330p
X101 500K
C134 330p
R149 3.3k
R124 1M
R150 10k
IC103
IC103 M65830AP ECHO AMP
C127 1μ 50V
R123 2.7k
C126 1200p
R121 10k
C125 0.068
R120 15k
C122 47μ 50V
C121 0.068
R126 30
C120 1200p
R117 10k
C116 1μ 50V
R116 15k
R118 30k
R122 15k
R119 3k
R115 15k
C129 0.022
C128 0.012
C124 0.1μ TF
C119 0.022
C118 1μ 50V
C117 0.012
C123 0.1μ TF
CN102 7P FFC
Ð.GNÐ
ECHO.SW
-7.5V
MIC
A.GNÐ
MIC.OUT
+7.5V
R114 1k
CN101 5P B-TO-B
MIC.VOLIN
MIC.VOLOUT
A.GNÐ
ECHO.VOLOUT
ECHO.VOLIN
R106 220k
R107 220k
R109 10k
R110 10k
IC101 M5218AP
C110 10μ 50V
C100 100p
C114 10μ 50V
R111 10k
C113 100p
R108 18k
IC101
MIC AMP
TO DISPLAY BOARD CN2001 (See page40)
B
【JACK BOARD】
IC151
MIC AMP
EXCEPT AEP. G. IT. EE. UK MODEL
R104 270k
C106 47p
GND100
CA MODEL
R102 560
C104 100p
IC151 M5218AP
C109 0.1μ 50V
C111 1000p
C112 0.1μ
CN151 9P FFC
+7.5V
MIC
A.GNÐ
ECHO.SW
-7.5V
HP.L
HP.GNÐ
HP.R
HP.MUTE
C102 100p
R101 10k
C103 100p
R103 1k
C108 10μ 16V
C107 10μ 16V
R105 100k
MIC.JACK
J101
E. AUS. EA. MY. SP, MX MODEL
R151 560
C151 100p
C153 0.01
G, IT MODEL
R152 560
C152 100p
J151
HEADPHONE
【SW BOARD】
A.REV
A.FWÐ
DUB.H
CD.SYNC
B.REV
B.FWÐ
PAUSE
REC
+5V
DOLBY
D.GNÐ
TC.KEYY
TC.KEYX
NC
NC
NC
KEY.1
CD.KEY
CN3001 18P (AMP) FFC
R3023 560
R3024 820
PAUSE
S3022
S3018
REC
CN3002
NC
Ð.GNÐ
KEY.1
KEY.2
B.FWÐLEÐ
B.REVLEÐ
NC
R3001 100
R3002 120
R3003 120
R3004 150
R3005 180
R3006 220
R3007 270
R3008 330
R3009 470
R3010 560
R3017 820
R3018 1.2k
S3001
S3002
S3003
S3004
S3005
S3006
S3007
S3008
S3009
S3010
S3011
S3012
S3013
OPEN/CLOSE
EDIT
CLEAR
CHECK
TIME
REPEAT
PROGRAM
CONTINUE
SHUFFLE
R3014 150
R3015 220
R3016 2.4k
R3020 5.6k
S3015
S3026
S3027
S3019
S3020
D3012 SEL5420E GREEN
D3011 SEL5420E GREEN
D3010 SEL5220S RED
D3009 SEL5220S RED
D3008 SEL5920A UMBER
D3007 SEL5220S RED
HIGH SPEED DUBBING
CD SYNCHRO
HIGH SPEED DUBBING
SYNCHRO
R3022 1.8k
R3027 1k
R3028 5.6k
R3029 12k
S3023
S3024
S3025
RELAY
DIRECTION
S3028
OFF ON
DOLBY NR
【TC SW BOARD】
S3055
S3054
S3051
S3053
S3052
D3502 SML1460E
D3501 SML1460E
R3063 270
R3061 330
R3056 12k
R3055 3.9k
R3052 2.2k
R3051 1.2k
R3054 2.2k
CN3051
NC
B.REVLEÐ
B.FWÐLEÐ
KEY.2
KEY.1
Ð.GNÐ
NC

4-5. PRINTED WIRING BOARDS – DECK SECTION –

- Refer to page 35 for Semiconductor Lead Layouts.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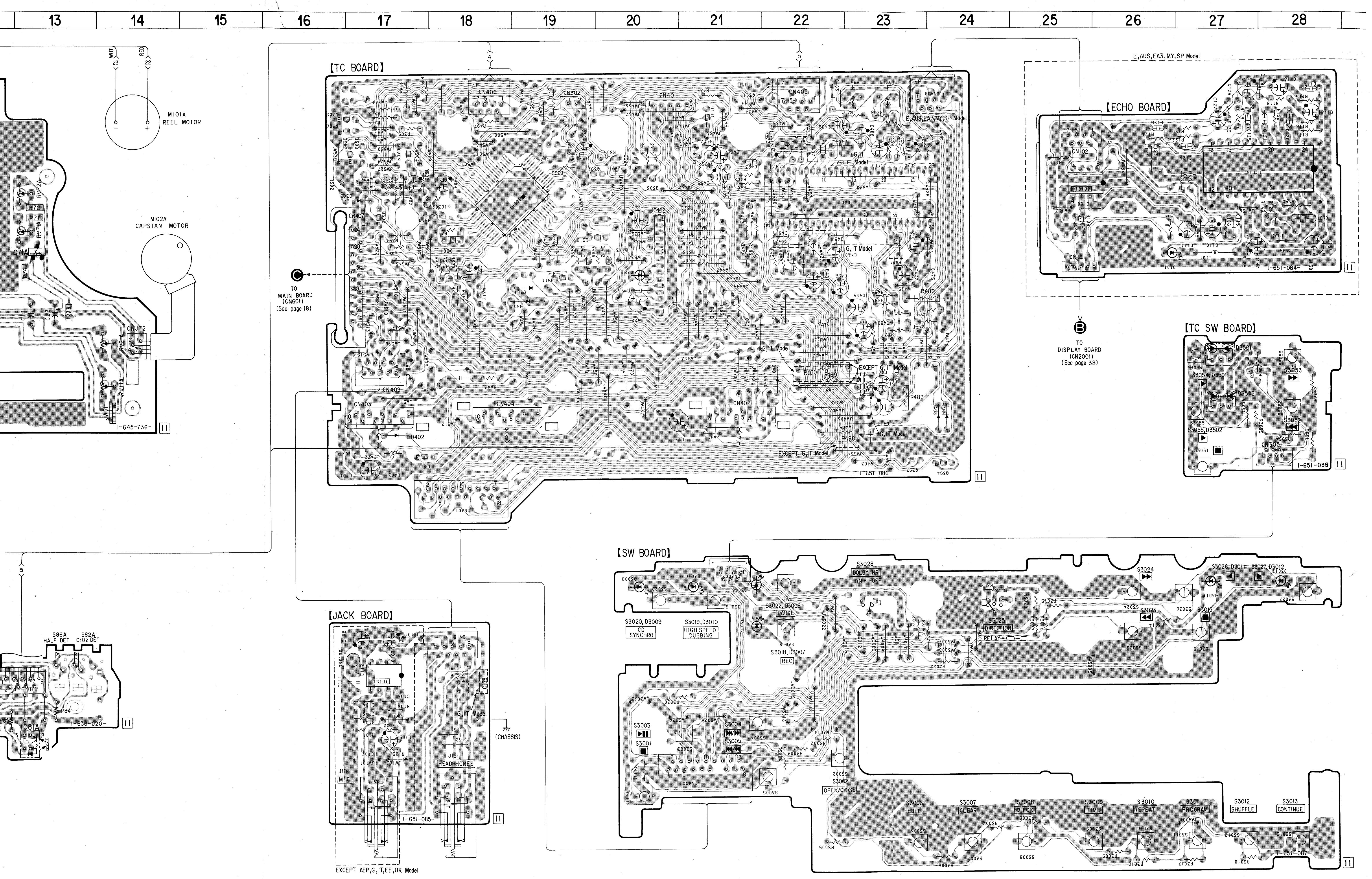
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
[MD-B BOARD]
HRP101 / HE101 RECORD/PLAYBACK/ERASE HEAD
CNJ32
BRN
ORG
BLK
BLU
YEL
WHT
RED
RED
WHT
CNP7
RV22
RV12
C26
C72
C16
L21
L11
Q51
Q52
Q53
R51
R52
R53
R54
R55
R56
C53
C52
C54
C56
C57
C58
C33
T51 BIAS OSC
C27
C17
JW23
RV72B
R72
R71
RV71B
Q71B
R42
JW21
JW22
JW24
JW25
JW16
JW18
JW17
JW19
JW20
JW14
JW13
JW12
JW15
JW2
JW1
IC31B
IC32
R33
R32
R31
R22
R21
R23
R24
R25
R15
R14
R13
R12
R41
R16
R26
R74
R73
C21
C22
C23
C24
C31
C32
C11
C12
C13
C14
C15
C25
CNP32
CNJ31
CNJ33
CNP72
RV21B
RV11B
1-650-299-
12
WHT
RED
M101B REEL MOTOR
M102B CAPSTAN MOTOR
HP101 PLAYBACK HEAD
CNJ32
YEL
WHT
RED
BLK
[MD-A BOARD]
CNP71
C72
RV72A
R72
R71
RV71A
Q71A
R74
IC31A
C11
R11
R12
R13
C18
C12
C21
R21
R22
C28
R24
R23
R32
C32
JW54
JW52
JW53
C13
C23
R73
CNP32
CNJ31
CNJ72
RV21A
RV11A
JW1
JW51
1-645-736-
11
WHT
RED
22
23
M101A REEL MOTOR
M102A CAPSTAN MOTOR
TO MAIN BOARD (CN601) (See page 18)
[TC BOA
CN407
CN4
[JACK B
J101
MIC
EXCEPT AE
1
2
3
4
5
[SW-B BOARD]
S85 ERASE PROOF (SIDE B)
R82
R83
S81B STOP DET
CNP81
S86B HALF DET
S82B CrO2 DET
S84 ERASE PROOF (SIDE A)
R84
R81
R85
IC81B
1-638-020-
11
[SW-A BOARD]
S81A STOP DET
CNP81
S86A HALF DET
S82A CrO2 DET
R84
R85
IC81A
1-638-020-
11
02


13
14
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16
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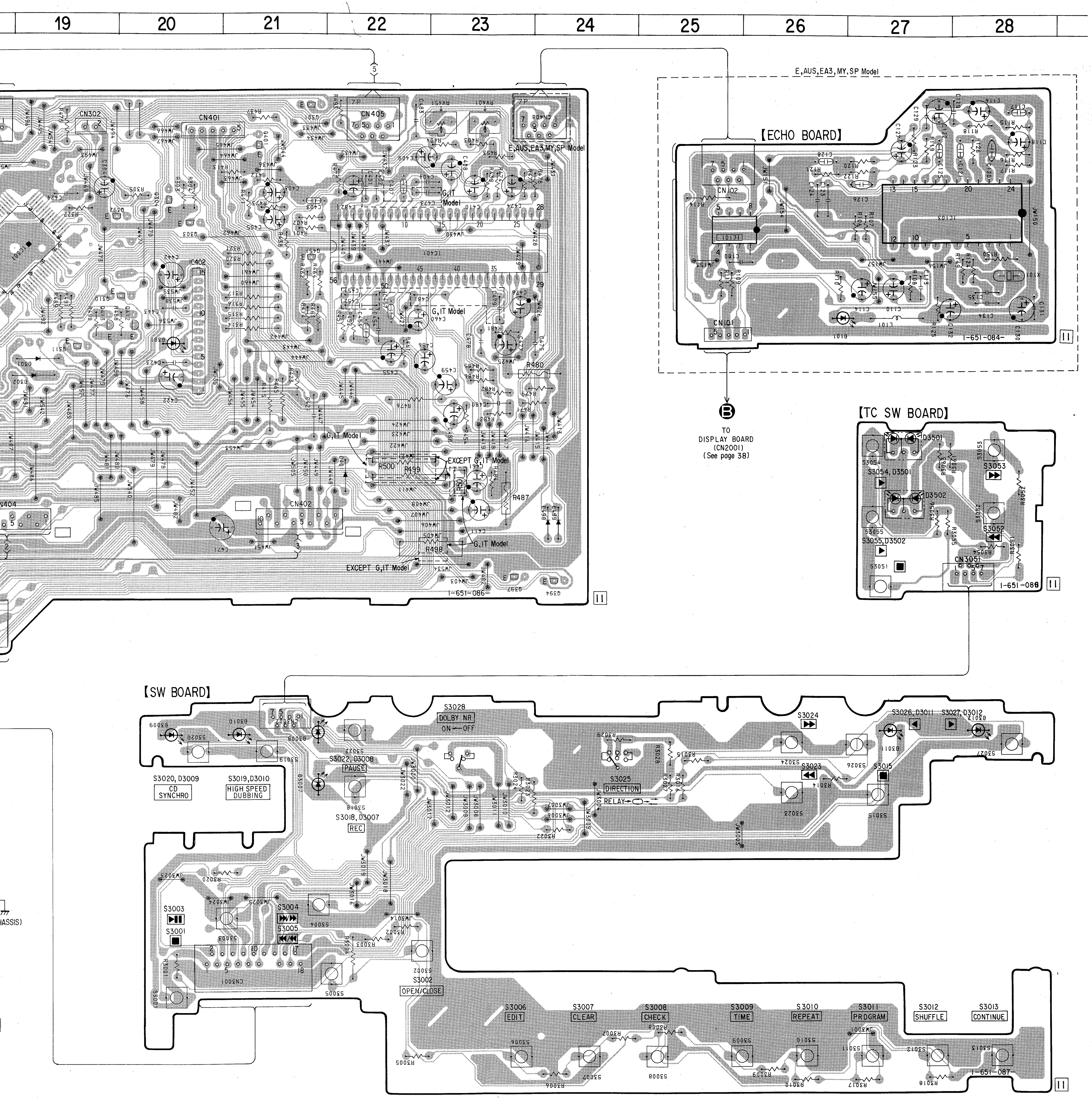
18
19
20
21
22
23
24
25
26
27
28
WHT
RED
M101A
REEL MOTOR
M102A
CAPSTAN MOTOR
1-645-736-
S86A
HALF DET
S82A
CrO2 DET
1-638-020-
【TC BOARD】
CN406
CN302
CN401
CN405
E,AUS,EA3,MY,SP Model
G,IT Model
CN407
IC402
CN409
CN403
CN404
CN402
D402
EXCEPT G,IT Model
1-651-086-
TO
MAIN BOARD
(CN601)
(See page 18)
E,AUS,EA3,MY,SP Model
【ECHO BOARD】
CN102
CN101
1-651-084-
TO
DISPLAY BOARD
(CN2001)
(See page 38)
【TC SW BOARD】
S3054, D3501
S3053
S3055,D3502
S3052
S3051
CN3051
1-651-080
【JACK BOARD】
G,IT Model
(CHASSIS)
J101
MIC
J151
HEADPHONES
1-651-085-
EXCEPT AEP,G,IT,EE,UK Model
【SW BOARD】
S3028
DOLBY NR
ON ←→ OFF
S3024
S3026, D3011
S3027, D3012
S3020, D3009
CD
SYNCHRO
S3019, D3010
HIGH SPEED
DUBBING
S3022, D3008
PAUSE
S3018, D3007
REC
S3025
DIRECTION
RELAY
S3023
S3015
S3003
S3001
S3004
S3005
S3002
OPEN/CLOSE
S3006
EDIT
S3007
CLEAR
S3008
CHECK
S3009
TIME
S3010
REPEAT
S3011
PROGRAM
S3012
SHUFFLE
S3013
CONTINUE
1-651-087


19
20
21
22
23
24
25
26
27
28
E,AUS,EA3,MY,SP Model
【ECHO BOARD】
CN102
CN101
IC101
IC103
1-651-084-
B
TO DISPLAY BOARD (CN2001) (See page 38)
【TC SW BOARD】
D3501
D3502
S3053
S3052
S3051
S3054, D3501
S3055, D3502
CN3051
1-651-086
CN401
CN402
CN405
CN302
IC402
IC401
G, IT Model
EXCEPT G, IT Model
R480
R487
R488
R499
R500
E,AUS,EA3,MY,SP Model
1-651-086
【SW BOARD】
S3020, D3009
CD SYNCHRO
S3019, D3010
HIGH SPEED DUBBING
S3028
DOLBY NR
ON — OFF
S3022, D3008
PAUSE
S3018, D3007
REC
S3025
DIRECTION
RELAY
S3024
S3023
S3026, D3011
S3027, D3012
S3015
S3003
S3001
S3004
S3005
S3002
OPEN/CLOSE
CN3001
S3006
EDIT
S3007
CLEAR
S3008
CHECK
S3009
TIME
S3010
REPEAT
S3011
PROGRAM
S3012
SHUFFLE
S3013
CONTINUE
1-651-087
(CHASSIS)

• SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location
D101	C - 26	IC401	C - 23
D301	D - 19	IC402	C - 20
D302	D - 19		
D303	C - 17		
D381	C - 20	Q51	B - 3
		Q52	B - 4
D401	E - 22	Q53	C - 3
D402	E - 17	Q71A	C - 13
D498	E - 24	Q71B	D - 6
D499	E - 24		
D3007	H - 21	Q301	A - 21
		Q302	C - 17
D3008	G - 21	Q303	B - 20
D3009	G - 20	Q304	B - 20
D3010	G - 21	Q305	B - 16
D3011	G - 27		
D3012	D - 28	Q306	B - 16
		Q307	B - 17
D3051	D - 27	Q308	B - 17
D3052	E - 27	Q309	B - 17
		Q310	C - 20
IC31A	D - 11	Q311	D - 19
IC31B	D - 3	Q312	D - 18
IC32	D - 5	Q394	F - 24
IC81A	I - 13	Q397	F - 23
IC81B	I - 6	Q401	B - 21
IC101	B - 25	Q411	F - 17
IC103	B - 27	Q412	C - 20
IC151	H - 17	Q413	C - 19
IC301	C - 19	Q451	C - 21
IC302	C - 18		

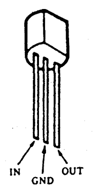
Note:

- ○— : parts extracted from the component side.
- ░ : Pattern on the side which is seen.
- ☐ : Chip components extracted from the rear side.

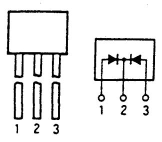
• CA	: Canadian
EA	: Saudi Arabia
EE	: East European
IT	: Italian
AUS	: Australian
G	: German
MA	: Malaysia
SP	: Singapore
MX	: Mexican

• SEMICONDUCTOR LEAD LAYOUTS

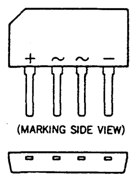
MSM6538-01GS-VKR1
RST600E-T



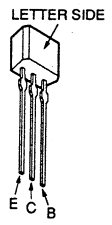
KV1560N



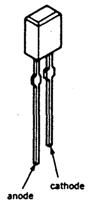
RBA-402


+ ~ ~ −
(MARKING SIDE VIEW)

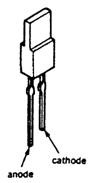
2SA1175-HFE
2SC403SP-51


LETTER SIDE
E C B

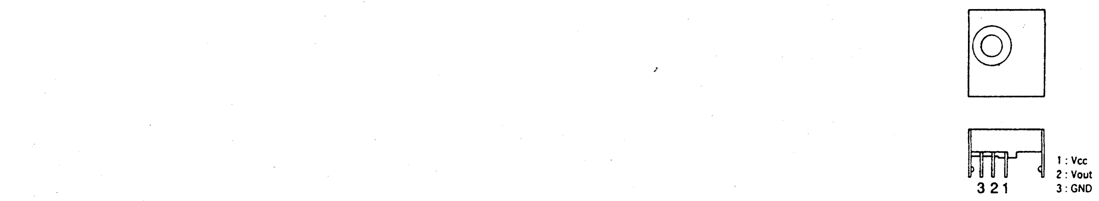
SEL4425GM-TP7


anode
cathode

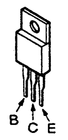
LED-SX-TP


anode
cathode

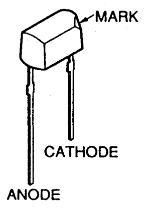
GP1U90XB


3 2 1
1 : Vcc
2 : Vout
3 : GND

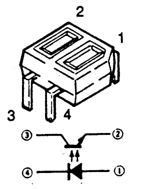
2SB1094-LK
2SB1375-LC
2SD1406-YGR
2SD2012
2SD2012-LC



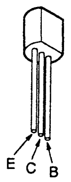
SEL5220S-TP
SEL5420S-TP
SML1460E


MARK
CATHODE
ANODE

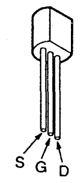
NJL5165K-B(H1)



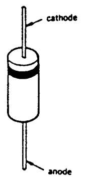
2SB1068-K
2SC1841-PAFAEA
2SC2001TP-K1K2
2SC3112
2SD1616-K



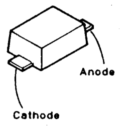
2SK246-GR3



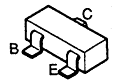
UZP-8.2B


cathode
anode

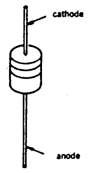
MA-8043-M


Anode
Cathode

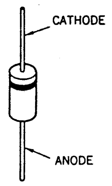
2SA1162-G
2SC3395
2SC4154



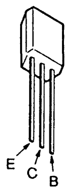
RD6.2ESB2
UZP-7.5B
11ES2


cathode
anode

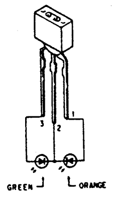
UZ-5.6BS-TP
UZ-30BSD-TP
UZ-12BSC-TP
1N4148M


CATHODE
ANODE

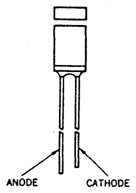
DTA114ES
DTA124ES
DTA144ES
DTC114ES
DTC144ES
2SC2603-EF
2SC3622A-LK
2SC26690Y-TPE4



SML1260S


1 2
GREEN
ORANGE

SEL5920A


ANODE
CATHODE

• SEMICONDUCTOR LOC

Ref. No.	Location	Re
D201	G - 13	IC
D202	G - 15	IC
D203	H - 14	IC
D204	I - 11	IC
D205	F - 13	IC
D206	I - 14	
D207	H - 13	Q2
D208	G - 9	Q2
D213	I - 7	Q2
D214	H - 10	Q2
		Q2
D215	H - 10	
D216	G - 11	Q2
D217	H - 9	Q8
D219	H - 9	Q8
D801	B - 12	Q8
		Q9
D851	B - 13	
D901	D - 9	Q9
D902	D - 8	Q9
D903	C - 8	Q9
D904	D - 8	Q9
		Q9
D905	C - 8	
D906	D - 8	Q9
D909	C - 11	Q9
D910	C - 13	Q9
D911	D - 13	Q9
D912	B - 10	
D951	C - 4	
D2000	G - 9	
D2001	I - 13	
D2002	G - 15	
IC201	F - 12	
IC202	F - 14	
IC203	I - 13	
IC204	G - 15	
IC205	G - 14	

Note:

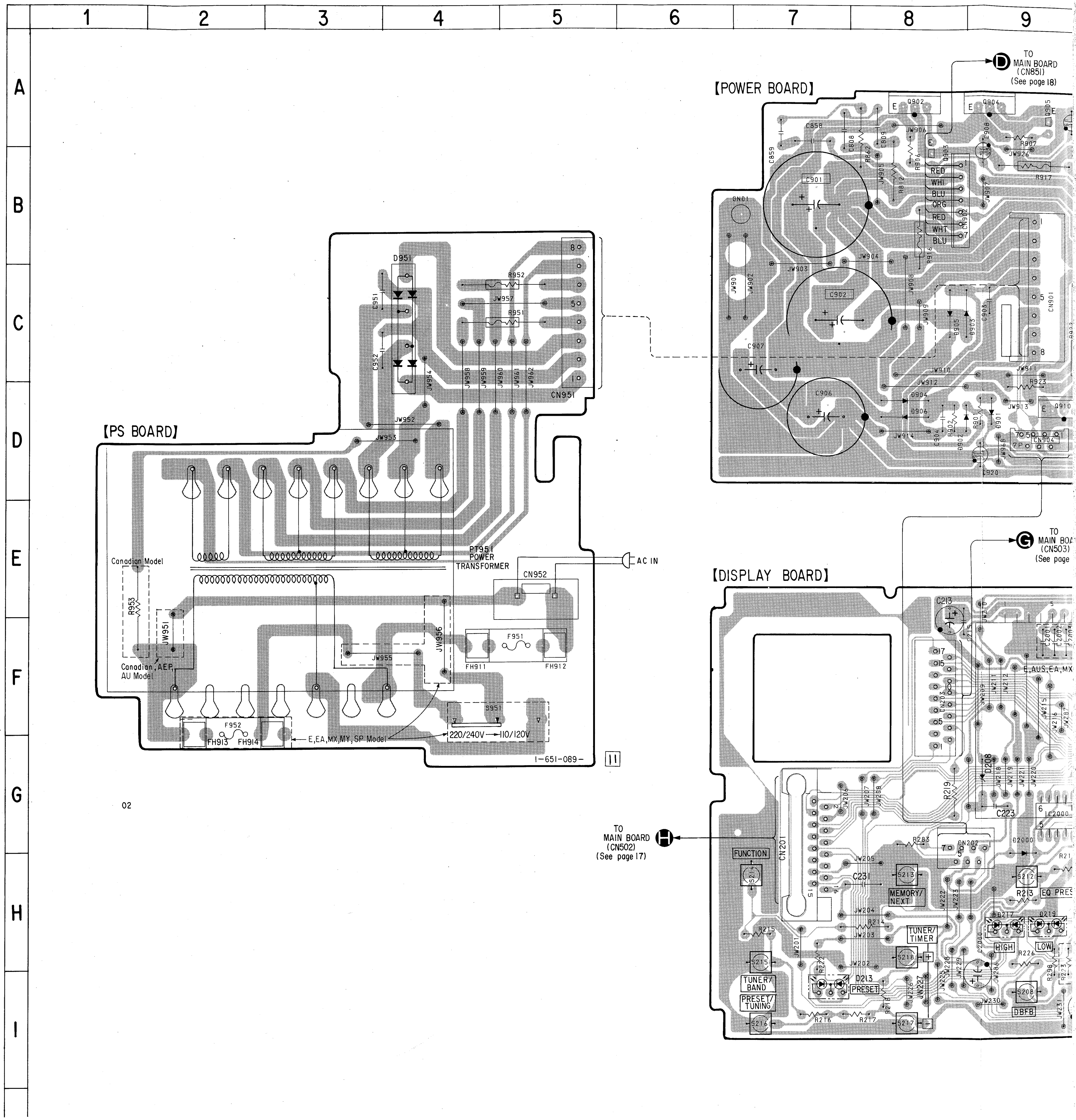
- ○— : parts extracted fr
- ░ : Pattern on the
- CA : Canadian
  EA : Saudi Arabia
  EE : East European
  IT : Italian
  AUS : Australian
  G : German
  MA : Malaysia
  SP : Singapore
  MX : Mexican

4-6. PRINTED WIRING BOARDS – DISPLAY SECTION –

• Refer to page 35 for Semiconductor Lead Layouts.

• SEMICONDUCTOR LOCATION

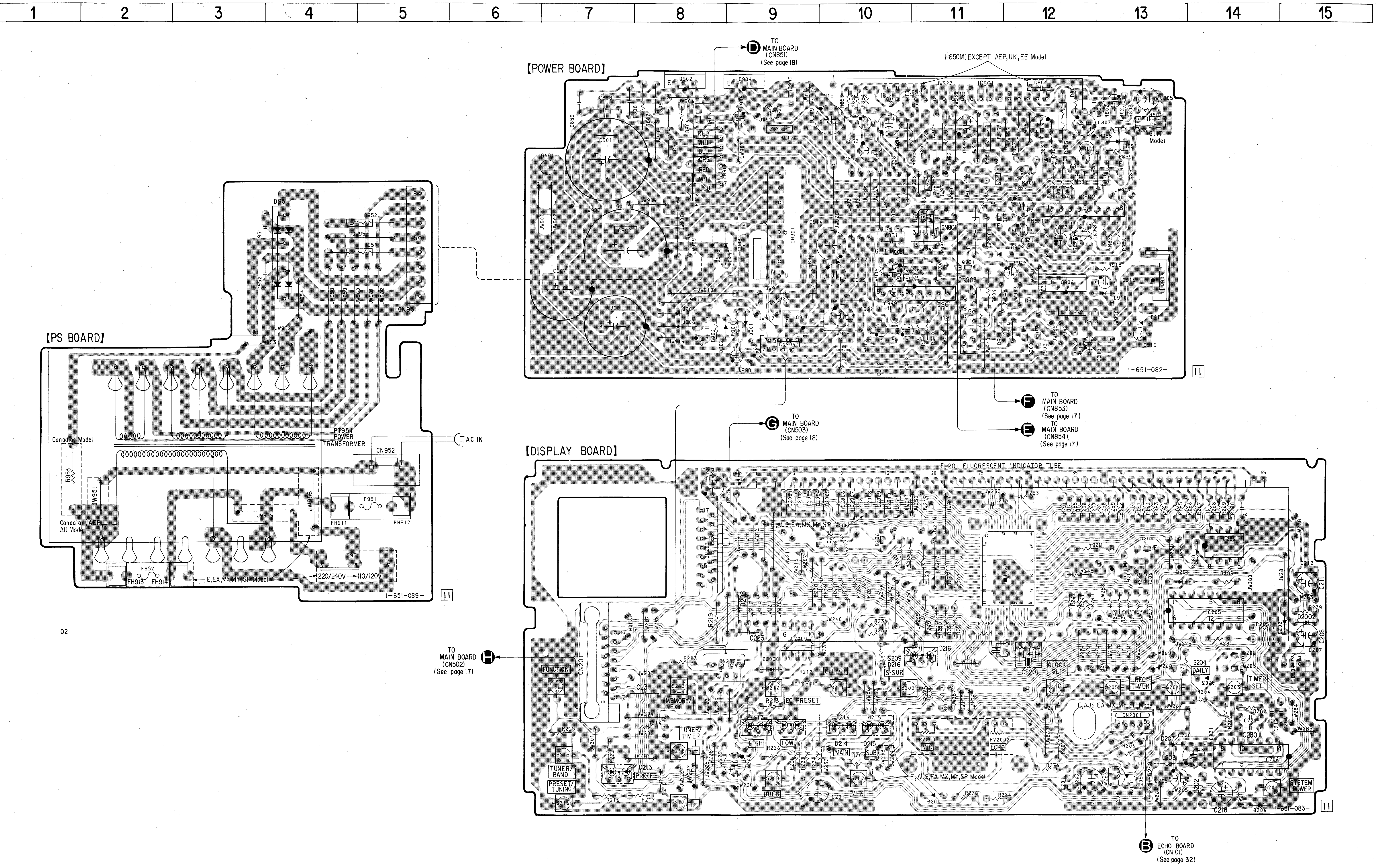
Ref. No.	Location	Ref. No.	Location
D201	G - 13	IC206	H - 14
D202	G - 15	IC801	A - 11
D203	H - 14	IC802	B - 12
D204	I - 11	IC901	C - 11
D205	F - 13	IC2000	G - 9
D206	I - 14		
D207	H - 13	Q201	I - 12
D208	G - 9	Q202	G - 14
D213	I - 7	Q203	G - 14
D214	H - 10	Q204	F - 13
		Q205	F - 10
D215	H - 10		
D216	G - 11	Q206	F - 10
D217	H - 9	Q801	B - 11
D219	H - 9	Q851	B - 13
D801	B - 12	Q871	C - 11
		Q901	C - 11
D851	B - 13		
D901	D - 9	Q902	A - 8
D902	D - 8	Q903	B - 8
D903	C - 8	Q904	A - 9
D904	D - 8	Q905	A - 9
		Q906	C - 12
D905	C - 8		
D906	D - 8	Q907	C - 13
D909	C - 11	Q908	D - 12
D910	C - 13	Q909	D - 12
D911	D - 13	Q910	D - 9
D912	B - 10		
D951	C - 4		
D2000	G - 9		
D2001	I - 13		
D2002	G - 15		
IC201	F - 12		
IC202	F - 14		
IC203	I - 13		
IC204	G - 15		
IC205	G - 14		


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
H
I
TO MAIN BOARD (CN851) (See page 18)
D
【POWER BOARD】
【PS BOARD】
【DISPLAY BOARD】
TO MAIN BOARD (CN503) (See page
G
TO MAIN BOARD (CN502) (See page 17)
H
D951
C951
C952
R952
R951
JW957
JW952
JW953
JW954
JW955
JW956
JW951
JW958
JW959
JW960
JW961
JW962
CN951
PT951 POWER TRANSFORMER
AC IN
CN952
F951
FH911
FH912
F952
FH913
FH914
S951
220/240V
110/120V
E,EA,MX,MY,SP Model
Canadian Model
Canadian,AEP, AU Model
R953
1-651-089-
11
02
C901
C902
C906
C907
C858
C859
CN901
CN801
Q902
Q904
Q905
R907
R917
JW926
RED
WHI
BLU
ORG
RED
WHT
BLU
JW903
JW904
JW910
JW912
JW913
JW914
D904
D906
D905
D903
R923
Q910
CN904
Q920
C213
C223
R219
D208
IC2000
R2000
R283
CN201
CN202
C231
FUNCTION
S214
S213
MEMORY/ NEXT
TUNER/ TIMER
S218
TUNER/ BAND
S215
PRESET/ TUNING
S216
S217
D213
PRESET
R215
R216
R217
R213
EQ PRESET
HIGH
LOW
S212
S219
S208
DBFB
R226
JW201
JW202
JW203
JW204
JW205
JW206
JW207
JW208
JW230
E,AUS,EA,MX

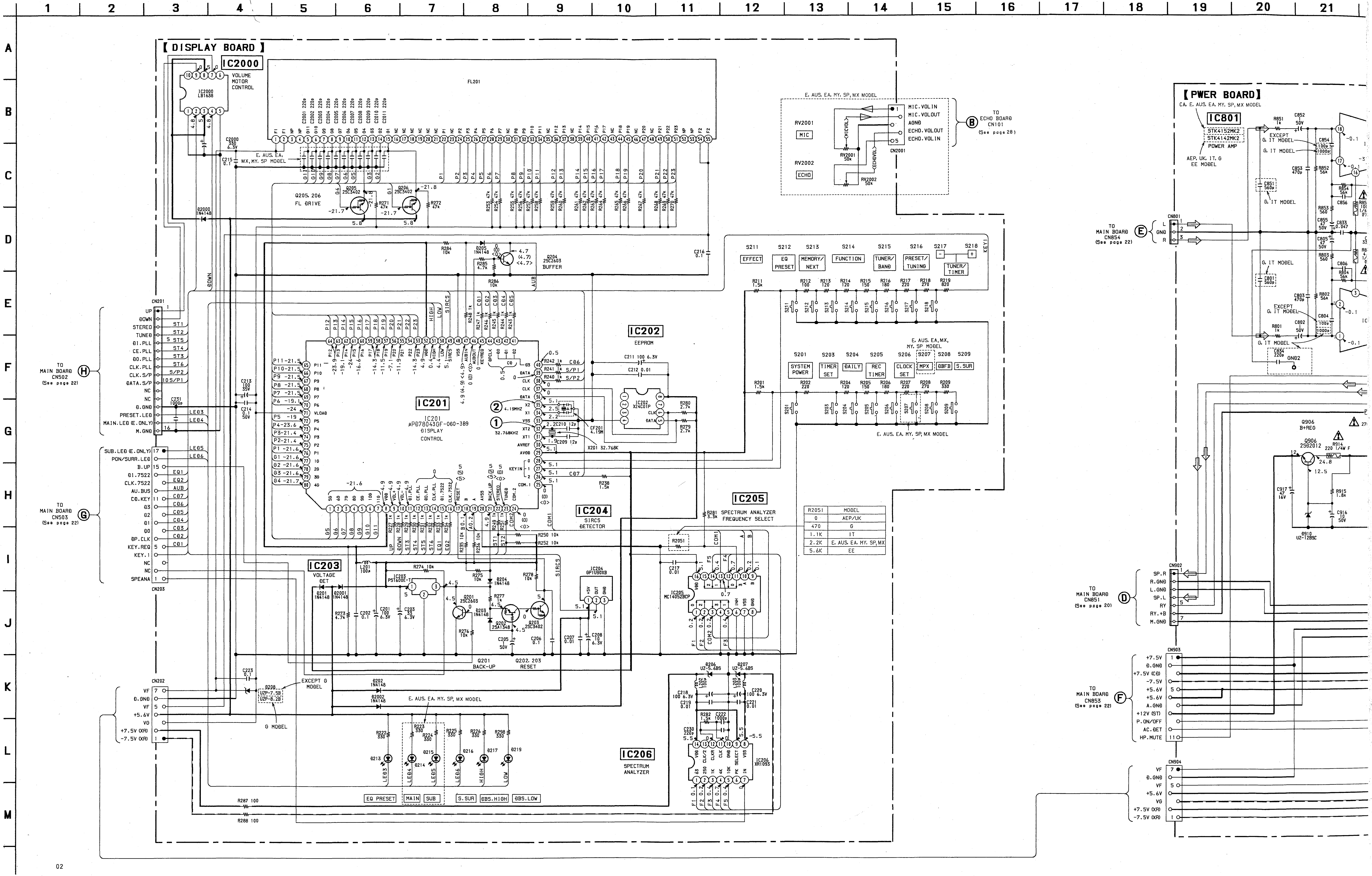
Note:

- ○— : parts extracted from the component side.
- ░ : Pattern on the side which is seen.
- CA : Canadian
  EA : Saudi Arabia
  EE : East European
  IT : Italian
  AUS : Australian
  G : German
  MA : Malaysia
  SP : Singapore
  MX : Mexican

RINTED WIRING BOARDS – DISPLAY SECTION – • Refer to page 35 for Semiconductor Lead Layouts.

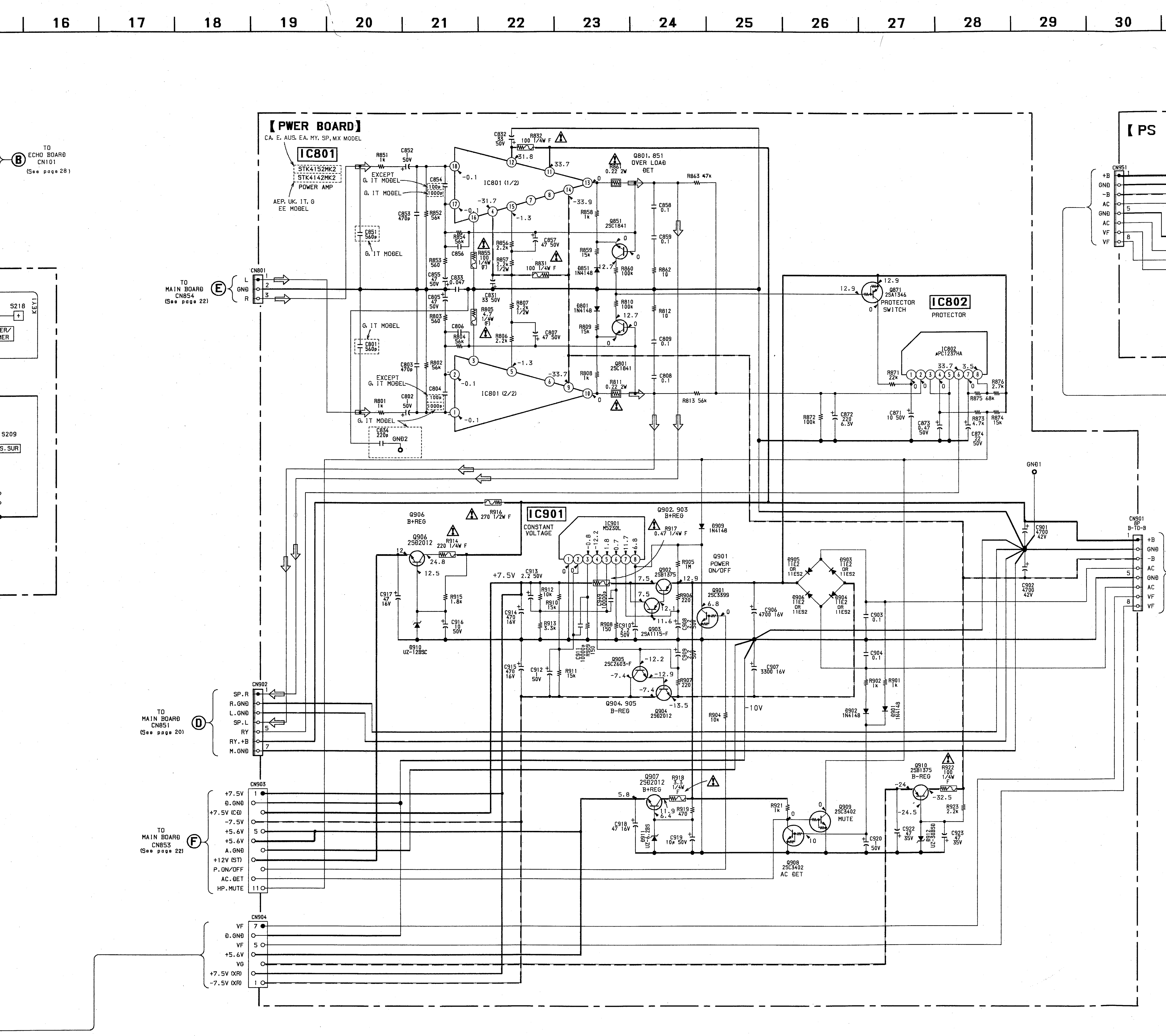

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
【POWER BOARD】
TO MAIN BOARD (CN851) (See page 18)
H650M: EXCEPT AEP, UK, EE Model
G, IT Model
IC801
IC802
CN901
CN801
CN903
CN904
IC901
C901
C902
C906
C907
D951
RED
WHT
BLU
ORG
1-651-082-
11
TO MAIN BOARD (CN853) (See page 17)
TO MAIN BOARD (CN854) (See page 17)
TO MAIN BOARD (CN503) (See page 18)
【PS BOARD】
CN951
PT951 POWER TRANSFORMER
CN952
AC IN
F951
FH911
FH912
F952
FH913
FH914
S951
220/240V ⟷ 110/120V
Canadian Model
Canadian, AEP, AU Model
E, EA, MX, MY, SP Model
1-651-089-
11
02
【DISPLAY BOARD】
FL201 FLUORESCENT INDICATOR TUBE
TO MAIN BOARD (CN502) (See page 17)
CN201
IC201
IC202
IC205
IC206
IC2000
CN202
CN2001
E, AUS, EA, MX, MY, SP Model
FUNCTION
MEMORY/NEXT
TUNER/TIMER
TUNER/BAND
PRESET/TUNING
PRESET
HIGH
LOW
DBFB
EQ PRESET
EFFECT
S-SUR
MAIN
SUB
MPX
MIC
ECHO
RV2001
RV2002
CF201
CLOCK SET
REC TIMER
DAILY
TIMER SET
SYSTEM POWER
1-651-083-
11
TO ECHO BOARD (CN101) (See page 32)

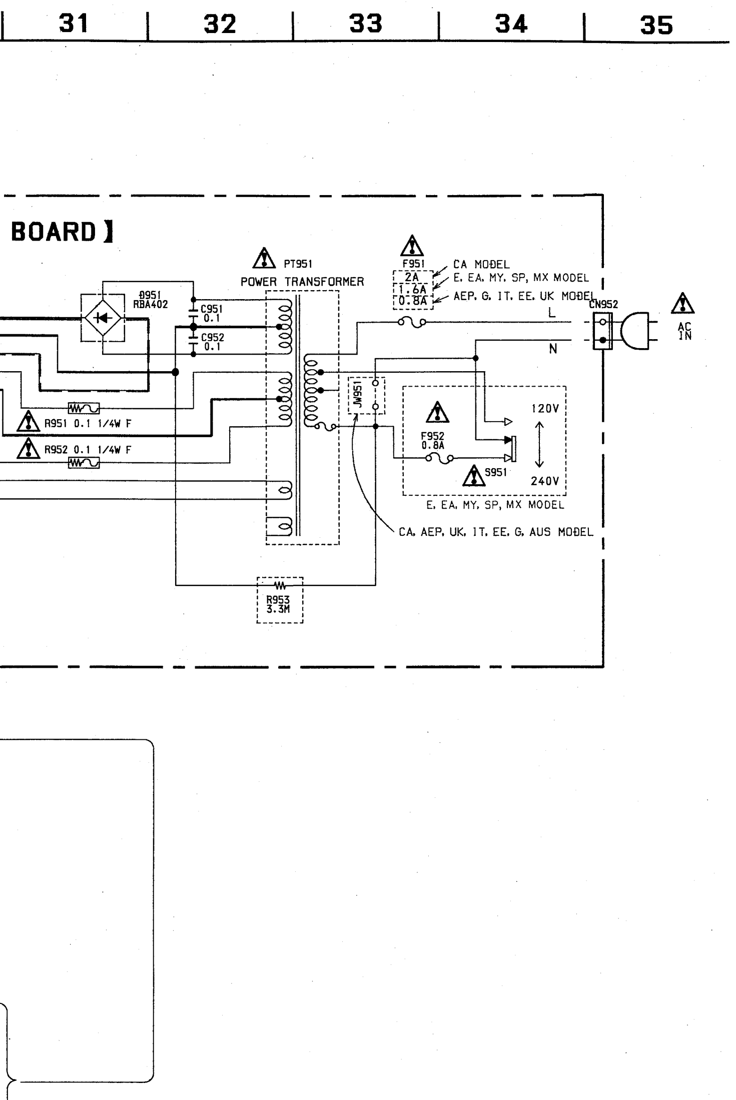
4-7. SCHEMATIC DIAGRAM – DISPLAY SECTION –



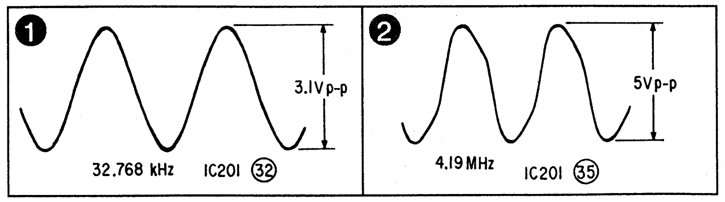
【DISPLAY BOARD】
IC2000 VOLUME MOTOR CONTROL
IC2000 LB1638
FL201
Q205, 206 FL DRIVE
IC201 μPD78043GF-060-3B9 DISPLAY CONTROL
IC202 EEPROM
IC202 X24C01P
IC203 VOLTAGE DET
IC203 PST600E-T
IC204 SIRCS DETECTOR
IC204 GP1U90X8
IC205 SPECTRUM ANALYZER FREQUENCY SELECT
IC205 MC14052BCP
IC206 SPECTRUM ANALYZER
IC206 XR1093
Q204 2SC2603 BUFFER
Q201 BACK-UP
Q202, 203 RESET
X201 32.768K
CF201 4.19M
E. AUS. EA. MY. SP. MX MODEL
RV2001 MIC
RV2002 ECHO
MIC.VOLIN
MIC.VOLOUT
AGND
ECHO.VOLOUT
ECHO.VOLIN
CN2001
TO ECHO BOARD CN101 (See page 28)
S211 EFFECT
S212 EQ PRESET
S213 MEMORY/NEXT
S214 FUNCTION
S215 TUNER/BAND
S216 PRESET/TUNING
S217 –
S218 +
TUNER/TIMER
S201 SYSTEM POWER
S203 TIMER SET
S204 DAILY
S205 REC TIMER
S206 CLOCK SET
S207 MPX
S208 DBFB
S209 S.SUR
E. AUS. EA, MX, MY. SP MODEL
TO MAIN BOARD CN502 (See page 22)
TO MAIN BOARD CN503 (See page 22)
CN201
CN203
CN202
EXCEPT G MODEL
G MODEL
EQ PRESET
MAIN
SUB
S.SUR
DBS.HIGH
DBS.LOW
【PWER BOARD】
CA. E. AUS. EA. MY. SP. MX MODEL
IC801 STK4152MK2 STK4142MK2 POWER AMP
AEP. UK. IT. G EE MODEL
TO MAIN BOARD CN854 (See page 22)
TO MAIN BOARD CN851 (See page 20)
TO MAIN BOARD CN853 (See page 22)
Q906 B+REG
Q906 2SD2012
D910 UZ-12BSC
CN801
CN902
CN903
CN904
02

R2051	MODEL
0	AEP/UK
470	G
1.1K	IT
2.2K	E. AUS. EA. MY. SP. MX
5.6K	EE


16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
TO ECHO BOARD CN101 (See page 28)
S218
KEY1
S209
S.SUR
【PWER BOARD】
CA, E, AUS, EA, MY, SP, MX MODEL
IC801
STK4152MK2
STK4142MK2
POWER AMP
AEP, UK, IT, G EE MODEL
TO MAIN BOARD CN854 (See page 22)
CN801
L
GND
R
EXCEPT G, IT MODEL
G, IT MODEL
IC801 (1/2)
IC801 (2/2)
R851 1k
C852 1 50V
C854 100p 1000p
C853 470p
R852 56k
C851 560p
C801 560p
C834 220p
GND2
R801 1k
C802 1 50V
C804 100p 1000p
C803 470p
R802 56k
R853 560
R854 56k
C856
R855 100 1/4W (F)
C855 47 50V
C833 0.047
C805 47 50V
C831 33 50V
R803 560
R805 4.7 1/4W (F)
C806
R804 56k
R856 2.2k
R857 2.2k 1/2W
C857 47 50V
R831 100 1/4W F
R807 2.2k 1/2W
R806 2.2k
C807 47 50V
C832 33 50V
R832 100 1/4W F
Q801, 851 OVER LOAD DET
R861 0.22 2W
R858 1k
Q851 2SC1841
R859 15k
D851 1N4148
R860 100k
D801 1N4148
R810 100k
R809 15k
R808 1k
Q801 2SC1841
R811 0.22 2W
C858 0.1
C859 0.1
R862 10
R812 10
C809 0.1
C808 0.1
R863 47k
R813 56k
IC802
PROTECTOR
Q871 2SA1346 PROTECTOR SWITCH
IC802 μPC1237HA
R871 22k
R876 2.7k
R875 68k
R872 100k
C872 220 6.3V
C871 10 50V
C873 0.47 50V
R873 4.7k
R874 15k
C874 22 50V
GND1
IC901
CONSTANT VOLTAGE
IC901 M5230L
Q906 B+REG
Q906 2SD2012
R916 270 1/2W F
R914 220 1/4W F
R915 1.8k
C917 47 16V
C916 10 50V
D910 UZ-12BSC
Q902, 903 B+REG
R917 0.47 1/4W F
D909 1N4148
+7.5V
C913 2.2 50V
R912 10k
R910 15k
C914 470 16V
R913 3.3k
C949 10000p
R908 150
C910 2.2 50V
Q902 2SB1375
Q903 2SA1115-F
R905 1M
R906 220
C908 2.2 50V
Q901 POWER ON/OFF
Q901 2SC3399
C915 470 16V
C912 1 50V
R911 15k
C911 10000p
R909 150
Q905 2SC2603-F
C909 2.2 50V
R907 220
Q904, 905 B-REG
Q904 2SD2012
R904 10k
-10V
C906 4700 16V
C907 3300 16V
D905 11E2 OR 11ES2
D903 11E2 OR 11ES2
D906 11E2 OR 11ES2
D904 11E2 OR 11ES2
C903 0.1
C904 0.1
R902 1k
R901 1k
D902 1N4148
D901 1N4148
C901 4700 42V
C902 4700 42V
CN901 8P B-TO-B
+B
GND
-B
AC
GND
AC
VF
VF
TO MAIN BOARD CN851 (See page 20)
CN902
SP.R
R.GND
L.GND
SP.L
RY
RY.+B
M.GND
TO MAIN BOARD CN853 (See page 22)
CN903
+7.5V
D.GND
+7.5V (CD)
-7.5V
+5.6V
+5.6V
A.GND
+12V (ST)
P.ON/OFF
AC.DET
HP.MUTE
CN904
VF
D.GND
VF
+5.6V
VG
+7.5V (XR)
-7.5V (XR)
Q907 2SD2012 B+REG
R918 3.3 1/4W F
R919 470
C918 47 16V
D911 UZ-6.2BS
C919 10μ 50V
R921 1k
Q909 2SC3402 MUTE
Q908 2SC3402 AC DET
C920 1 50V
Q910 2SB1375 B-REG
R922 100 1/4W F
R923 2.2k
C922 47 35V
D912 UZ-30BSD
C923 47 35V
CN951
+B
GND
-B
AC
GND
AC
VF
VF

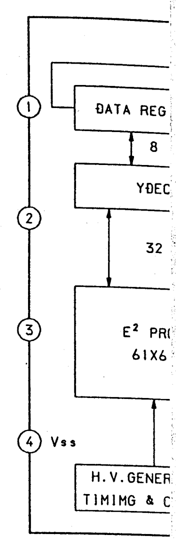

31
32
33
34
35
【PS BOARD】
PT951 POWER TRANSFORMER
D951 RBA402
C951 0.1
C952 0.1
R951 0.1 1/4W F
R952 0.1 1/4W F
R953 3.3M
F951
2A
1.6A
0.8A
CA MODEL
E, EA, MY, SP, MX MODEL
AEP, G, IT, EE, UK MODEL
CN952
L
N
AC IN
JW951
F952 0.8A
S951
120V
240V
E, EA, MY, SP, MX MODEL
CA, AEP, UK, IT, EE, G, AUS MODEL

• WAVEFORMS



• IC BLOCK D

IC202 X24C


①
DATA REG
8
YDEC
②
32
③
E² PR
61X6
④ Vss
H.V.GENER
TIMIMG & C

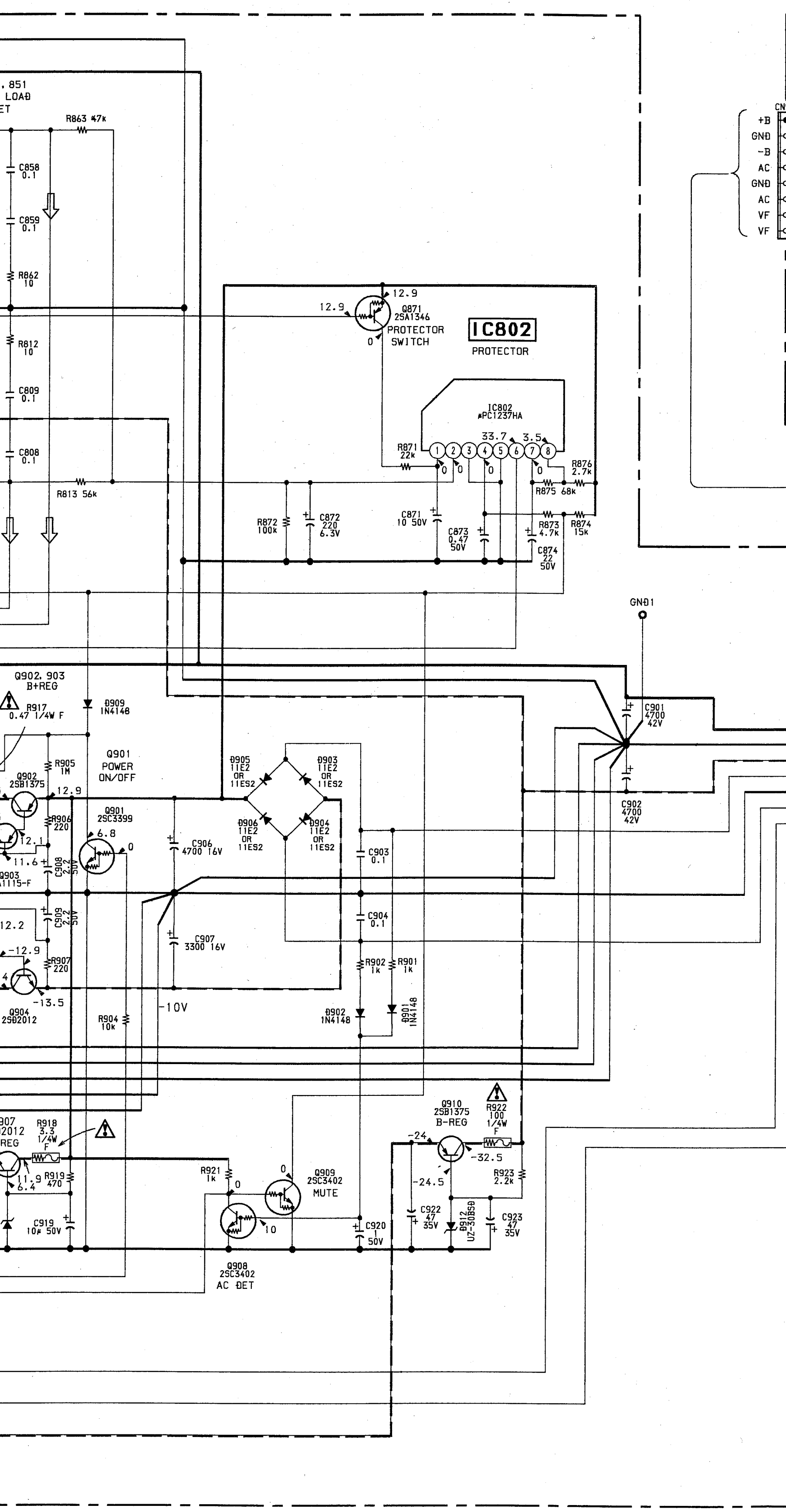
Note :

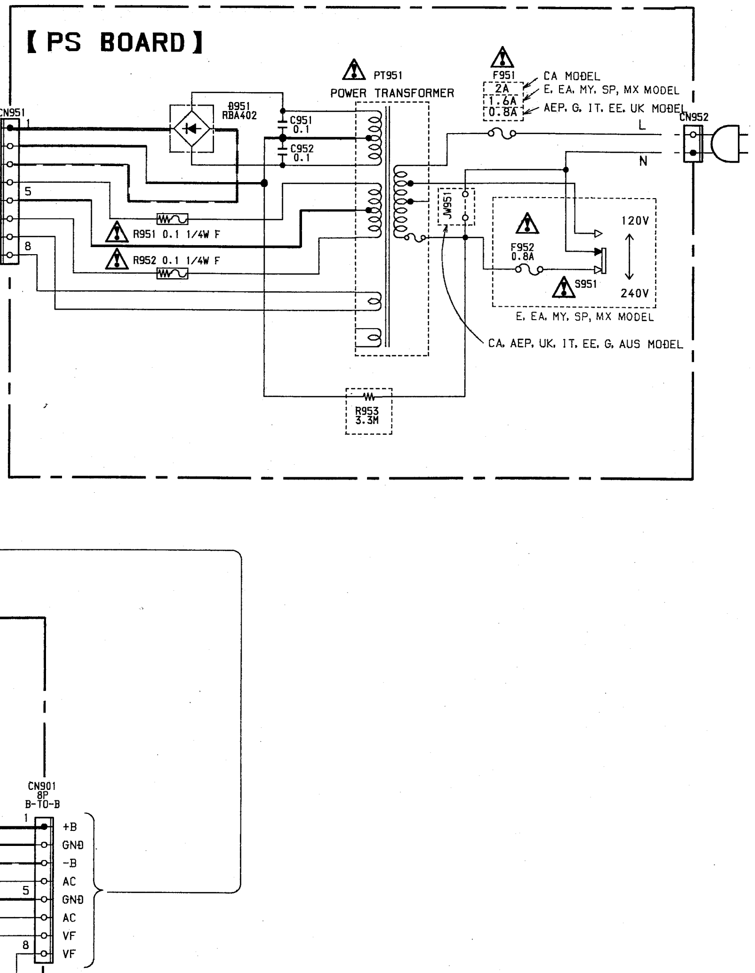
- All capacitors ar
  50WV or less ar
  tantalums.
- All resistors are
  specified.
- % : indicates tol
- △ : internal co
- ─[▭]─ : nonfl
- ─[∿]─ : fusib

> **Note :**
> The components
> fied by mark ⚠
> ted line with marl
> are critical for sa
> Replace only witl
> number specified

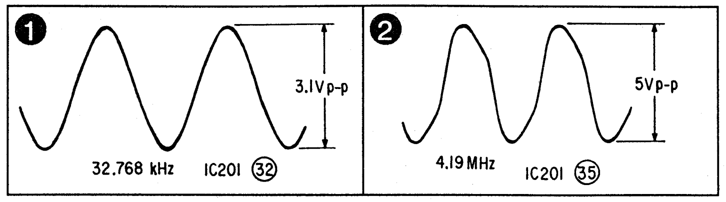
- ▬▬▬ : B+ Li
- ▬ ▬ ▬ : B – L
- Voltage and wav
  no-signal conditi
  no mark : FM (R
  no mark : PLAYI
- Voltages are tak
  Voltage variatior
  tolerances.
- Waveforms are t
  Voltage variatior
  tolerances.
- Circled numbers
- Signal path.
  ⇨ : FM
- CA : Canadian
  EA : Saudi Ara
  EE : East Euro
  IT : Italian
  AUS : Australiar
  G : German
  MA : Malaysia
  SP : Singapore
  MX : Mexican

24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35


R863 47k
C858 0.1
C859 0.1
R862 10
R812 10
C809 0.1
C808 0.1
R813 56k
12.9
Q871 2SA1346 PROTECTOR SWITCH
IC802
PROTECTOR
IC802 μPC1237HA
33.7
3.5
R871 22k
R876 2.7k
R875 68k
R872 100k
C872 220 6.3V
C871 10 50V
C873 0.47 50V
R873 4.7k
R874 15k
C874 22 50V
GND1
Q902, 903 B+REG
R917 0.47 1/4W F
D909 1N4148
Q901 POWER ON/OFF
R905 1M
Q902 2SB1375
12.9
R906 220
6.8
Q991 2SC3399
D905 11E2 OR 11ES2
D903 11E2 OR 11ES2
D906 11E2 OR 11ES2
D904 11E2 OR 11ES2
C906 4700 16V
C903 0.1
C901 4700 42V
C902 4700 42V
Q903 2SD1115-F
12.2
-12.9
R907 220
-13.5
Q904 2SD2012
C907 3300 16V
C904 0.1
R902 1k
R901 1k
R904 10k
-10V
D902 1N4148
D901 1N4148
Q907 2SD2012 B-REG
R918 3.3 1/4W F
R919 470
C919 10 50V
R921 1k
Q908 2SC3402 AC DET
Q909 2SC3402 MUTE
Q910 2SB1375 B-REG
R922 100 1/4W F
-24
-32.5
-24.5
R923 2.2k
C922 47 35V
D912 UZ-36BSB
C923 47 35V
C920 1 50V

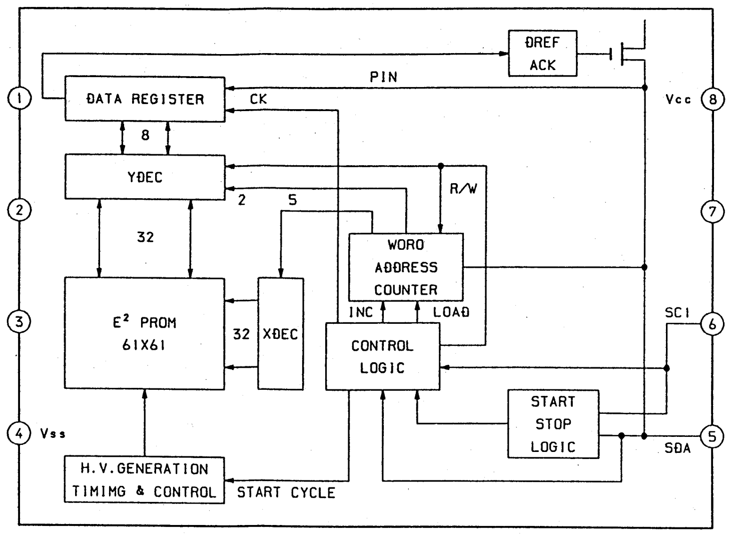

[PS BOARD]
PT951 POWER TRANSFORMER
D951 RBA402
C951 0.1
C952 0.1
F951 2A 1.6A 0.8A
CA MODEL
E, EA, MY, SP, MX MODEL
AEP, G, IT, EE, UK MODEL
CN951
+B
GND
-B
AC
GND
AC
VF
VF
CN952
AC IN
L
N
R951 0.1 1/4W F
R952 0.1 1/4W F
S951
F952 0.8A
120V
240V
E, EA, MY, SP, MX MODEL
CA, AEP, UK, IT, EE, G, AUS MODEL
R953 3.3M
CN901 8P B-TO-B
+B
GND
-B
AC
GND
AC
VF
VF

• WAVEFORMS



• IC BLOCK DIAGRAMS – DISPLAY SECTION –

IC202 X24C01P


DREF ACK
PIN
DATA REGISTER
CK
Vcc
8
YDEC
R/W
2
5
32
WORD ADDRESS COUNTER
INC
LOAD
E² PROM 61X61
32
XDEC
CONTROL LOGIC
SCI
START STOP LOGIC
Vss
H.V.GENERATION TIMING & CONTROL
START CYCLE
SDA

Note :

- All capacitors are in μ F unless otherwise noted. pF: μ μ F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.
- —▭— : nonflammable resistor.
- —∿— : fusible resistor.

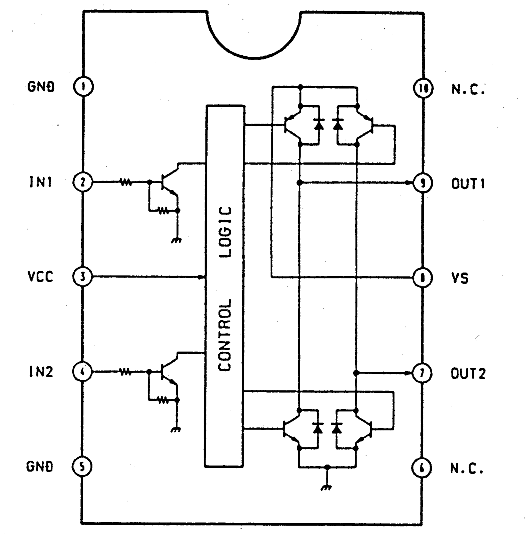
Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬ : B+ Line
- ■ ■ ■ : B – Line
- Voltage and waveforms are dc with respect to ground under no-signal conditions.

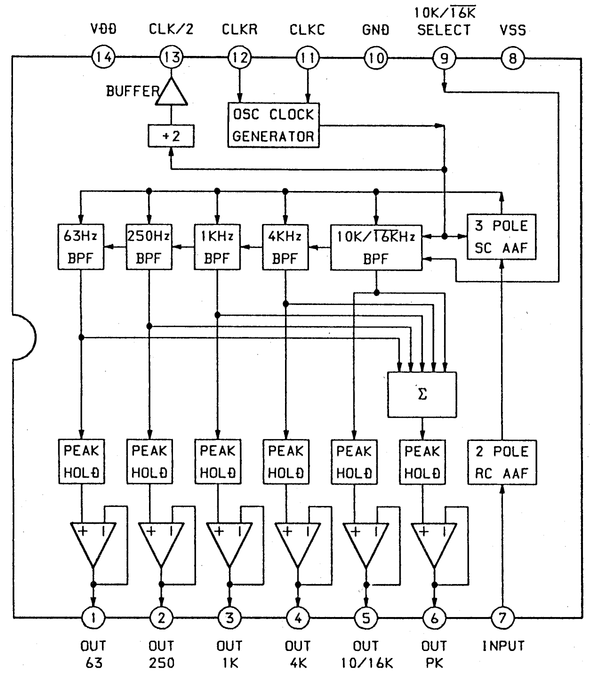
  no mark : FM (RADIO SECTION)
  no mark : PLAYBACK (AUDIO SECTION)
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.

  ⇨ : FM
- CA : Canadian
  EA : Saudi Arabia
  EE : East European
  IT : Italian
  AUS : Australian
  G : German
  MA : Malaysia
  SP : Singapore
  MX : Mexican

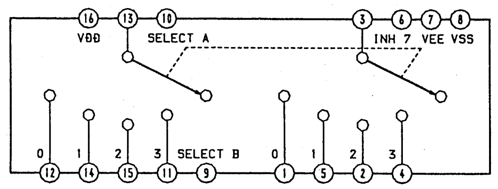
IC2000 LB1638


GND ①
IN1 ②
VCC ③
IN2 ④
GND ⑤
⑩ N.C.
⑨ OUT1
⑧ VS
⑦ OUT2
⑥ N.C.
CONTROL LOGIC

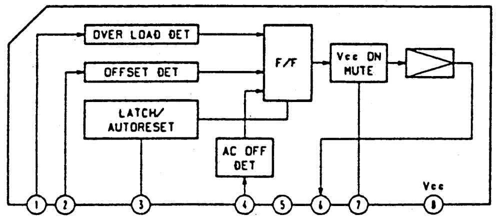
IC206 XR1093


VDD ⑭
CLK/2 ⑬
CLKR ⑫
CLKC ⑪
GND ⑩
10K/16K SELECT ⑨
VSS ⑧
BUFFER
÷2
OSC CLOCK GENERATOR
63Hz BPF
250Hz BPF
1KHz BPF
4KHz BPF
10K/16KHz BPF
3 POLE SC AAF
Σ
PEAK HOLD
2 POLE RC AAF
① OUT 63
② OUT 250
③ OUT 1K
④ OUT 4K
⑤ OUT 10/16K
⑥ OUT PK
⑦ INPUT

IC205 MC14052BCP

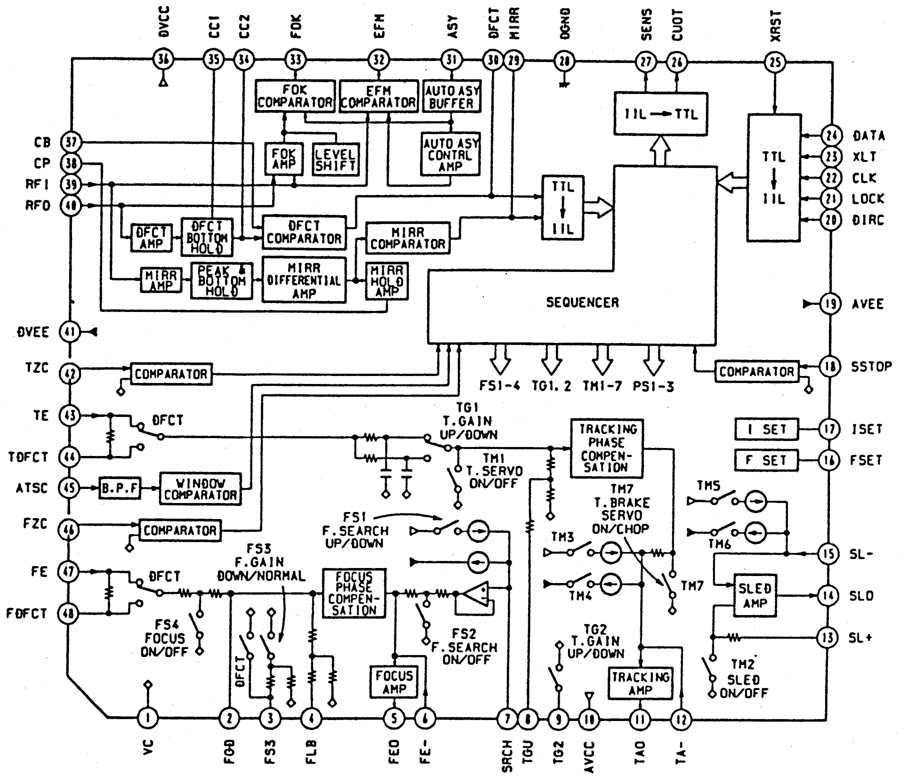

⑯ ⑬ ⑩
VDD
SELECT A
③ ⑥ ⑦ ⑧
INH 7 VEE VSS
0 1 2 3 SELECT B 0 1 2 3
⑫ ⑭ ⑮ ⑪ ⑨ ① ⑤ ② ④

IC802 μPC1237HA


OVER LOAD DET
OFFSET DET
LATCH/ AUTORESET
F/F
Vcc ON MUTE
AC OFF DET
Vcc
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

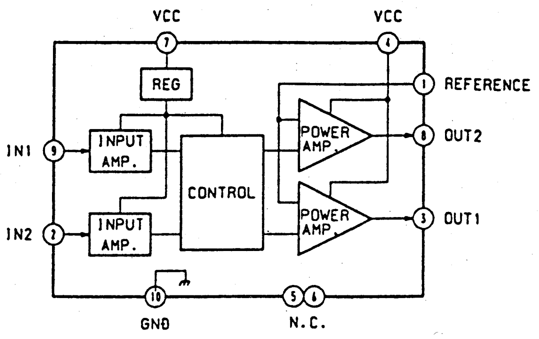
• IC BLOCK DIAGRAMS – CD SECTION –

IC101 CXA1372AQ



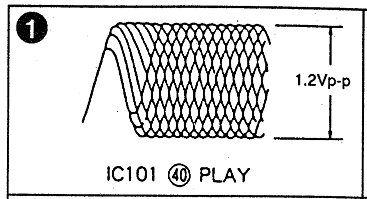
DVCC
CC1
CC2
FOK
EFM
ASY
DFCT
MIRR
DGND
SENS
CUOT
XRST
CB
CP
RFI
RFO
FOK COMPARATOR
EFM COMPARATOR
AUTO ASY BUFFER
FOK AMP
LEVEL SHIFT
AUTO ASY CONTROL AMP
IIL→TTL
TTL ↓ IIL
DFCT AMP
DFCT BOTTOM HOLD
DFCT COMPARATOR
MIRR COMPARATOR
MIRR AMP
PEAK & BOTTOM HOLD
MIRR DIFFERENTIAL AMP
MIRR HOLD AMP
SEQUENCER
DATA
XLT
CLK
LOCK
DIRC
AVEE
DVEE
TZC
COMPARATOR
SSTOP
FS1-4 TG1, 2 TM1-7 PS1-3
TE
DFCT
TG1 T.GAIN UP/DOWN
TM1 T.SERVO ON/OFF
TRACKING PHASE COMPEN-SATION
I SET
F SET
ISET
FSET
TDFCT
ATSC
B.P.F
WINDOW COMPARATOR
TM7 T.BRAKE SERVO ON/CHOP
TM5
TM3
TM6
FZC
FS1 F.SEARCH UP/DOWN
FS3 F.GAIN DOWN/NORMAL
SL-
FE
FOCUS PHASE COMPEN-SATION
TM4
TM7
SLED AMP
SLO
FDFCT
FS4 FOCUS ON/OFF
FS2 F.SEARCH ON/OFF
TG2 T.GAIN UP/DOWN
SL+
TM2 SLED ON/OFF
FOCUS AMP
TRACKING AMP
VC
FGD
FS3
FLB
FEO
FE-
SRCH
TGU
TG2
AVCC
TAO
TA-

IC103 M54641FP

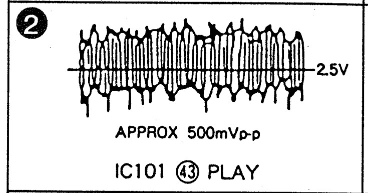


VCC
VCC
REG
REFERENCE
IN1
INPUT AMP.
CONTROL
POWER AMP.
OUT2
IN2
INPUT AMP.
POWER AMP.
OUT1
GND
N.C.

• WAVEFORMS

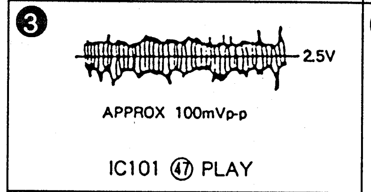


IC101 ㊵ PLAY



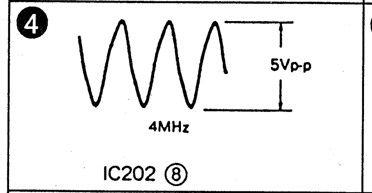
APPROX 500mVp-p

IC101 ㊸ PLAY

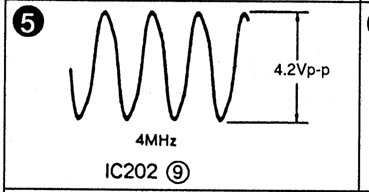


APPROX 100mVp-p

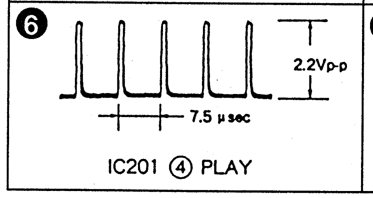
IC101 ㊼ PLAY



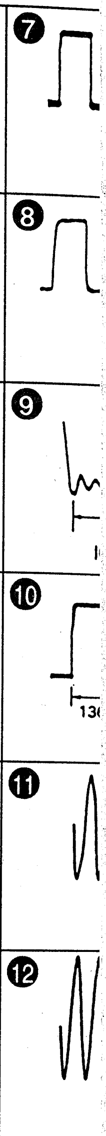
IC202 ⑧



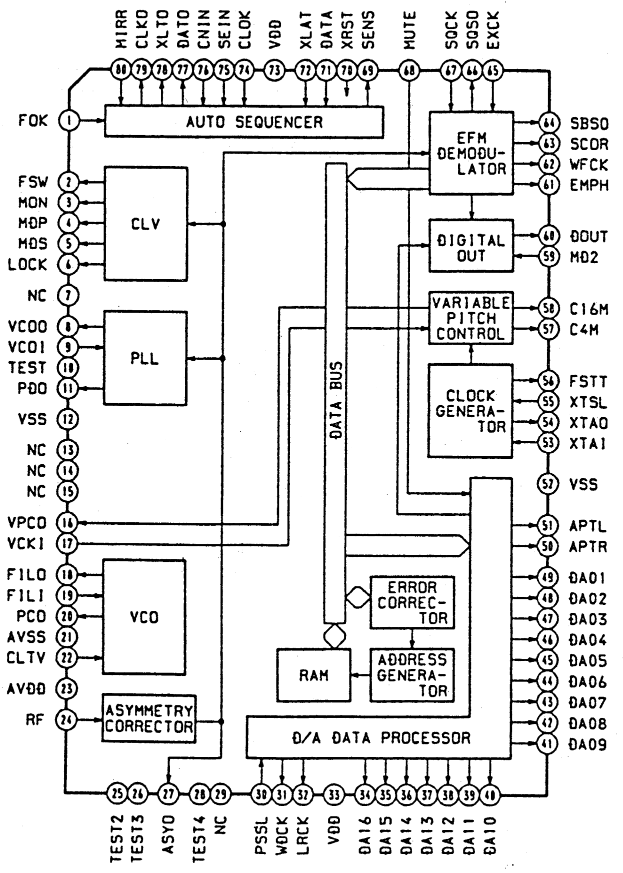
IC202 ⑨



IC201 ④ PLAY

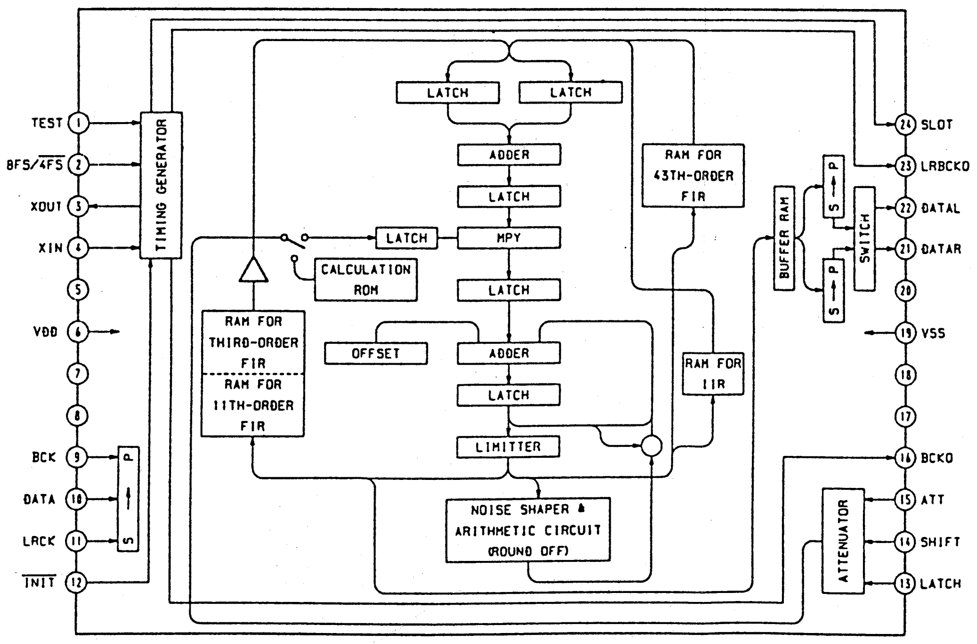


IC201 CXD2500BQ



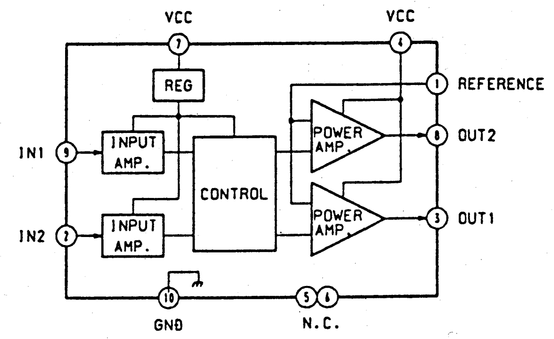
MIRR
CLKO
XLTO
DATO
CNIN
SEIN
CLOK
VDD
XLAT
DATA
XRST
SENS
MUTE
SQCK
SQSO
EXCK
FOK
AUTO SEQUENCER
EFM DEMODU-LATOR
SBSO
SCOR
WFCK
EMPH
FSW
MON
MDP
MDS
LOCK
CLV
DIGITAL OUT
DOUT
MD2
NC
VCOO
VCOI
TEST
PDO
PLL
VARIABLE PITCH CONTROL
C16M
C4M
DATA BUS
CLOCK GENERA-TOR
FSTT
XTSL
XTAO
XTAI
VSS
NC
NC
NC
VSS
VPCO
VCKI
APTL
APTR
FILO
FILI
PCO
AVSS
CLTV
VCO
ERROR CORREC-TOR
DA01
DA02
DA03
DA04
DA05
DA06
DA07
DA08
DA09
RAM
ADDRESS GENERA-TOR
AVDD
RF
ASYMMETRY CORRECTOR
D/A DATA PROCESSOR
TEST2
TEST3
ASYO
TEST4
NC
PSSL
WDCK
LRCK
VDD
DA16
DA15
DA14
DA13
DA12
DA11
DA10

IC203 MSM6538-01GS-VKR1

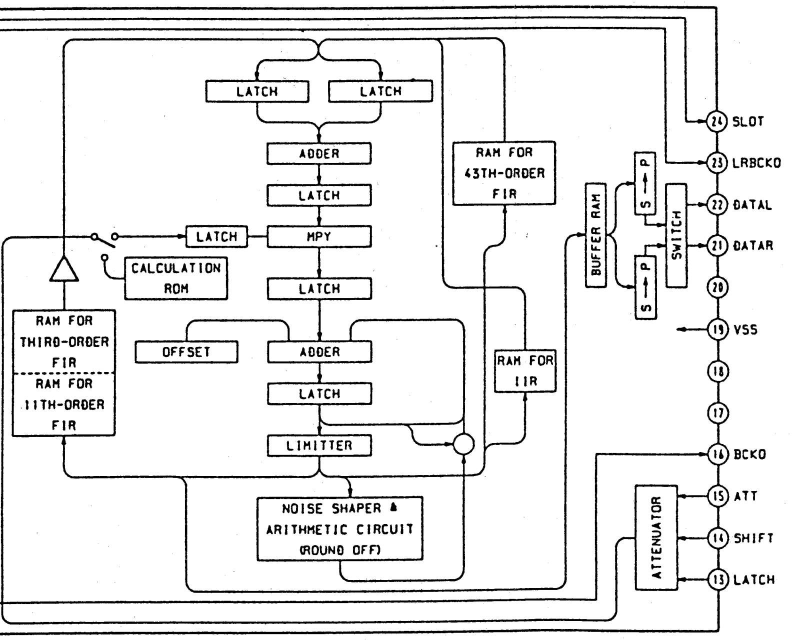


TEST
8FS/4FS
XOUT
XIN
VDD
BCK
DATA
LRCK
INIT
TIMING GENERATOR
S→P
LATCH
LATCH
ADDER
LATCH
LATCH
MPY
CALCULATION ROM
LATCH
RAM FOR THIRD-ORDER FIR
RAM FOR 11TH-ORDER FIR
OFFSET
ADDER
LATCH
LIMITTER
NOISE SHAPER & ARITHMETIC CIRCUIT (ROUND OFF)
RAM FOR 43TH-ORDER FIR
RAM FOR IIR
BUFFER RAM
S→P
SWITCH
S→P
ATTENUATOR
SLOT
LRBCKO
DATAL
DATAR
VSS
BCKO
ATT
SHIFT
LATCH

IC103 M54641FP

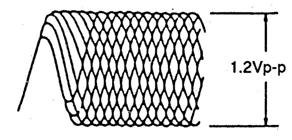

VCC
VCC
⑦
④
REG
① REFERENCE
IN1 ⑨
INPUT AMP.
POWER AMP
⑧ OUT2
CONTROL
IN2 ②
INPUT AMP.
POWER AMP
③ OUT1
⑩
GND
⑤⑥
N.C.

M6538-01GS-VKR1


LATCH
LATCH
ADDER
LATCH
MPY
LATCH
CALCULATION ROM
LATCH
OFFSET
ADDER
LATCH
LIMITTER
RAM FOR THIRD-ORDER FIR
RAM FOR 11TH-ORDER FIR
RAM FOR 43TH-ORDER FIR
RAM FOR IIR
BUFFER RAM
S→P
P→S
SWITCH
NOISE SHAPER & ARITHMETIC CIRCUIT (ROUND OFF)
ATTENUATOR
㉔ SLOT
㉓ LRBCKO
㉒ DATAL
㉑ DATAR
⑳
⑲ VSS
⑱
⑰
⑯ BCKO
⑮ ATT
⑭ SHIFT
⑬ LATCH

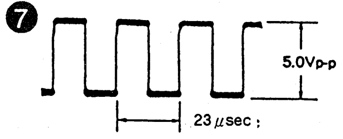
● WAVEFORMS

❶



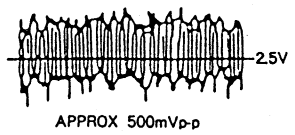
IC101 ㊵ PLAY

❼



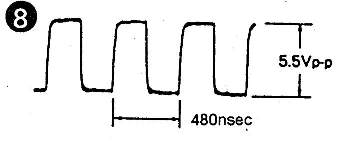
IC203 ⑪

❷



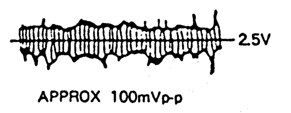
IC101 ㊸ PLAY

❽



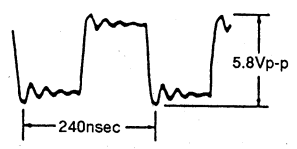
IC203 ⑩

❸



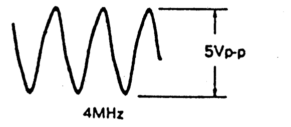
IC101 ㊼ PLAY

❾



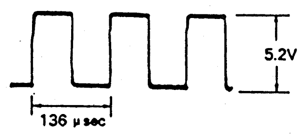
IC201 ㊶ PLAY

❹



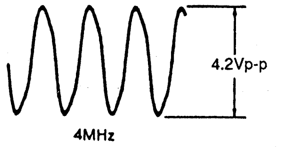
IC202 ⑧

❿



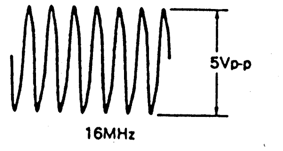
IC201 ㊸

❺



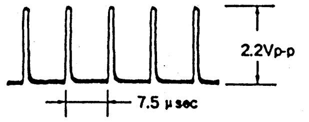
IC202 ⑨

⓫



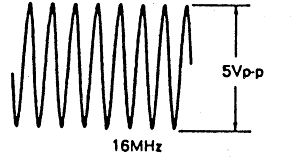
IC203 ③

❻



IC201 ④ PLAY

⓬



IC203 ④

● SEMICONDUCTOR LOCATION

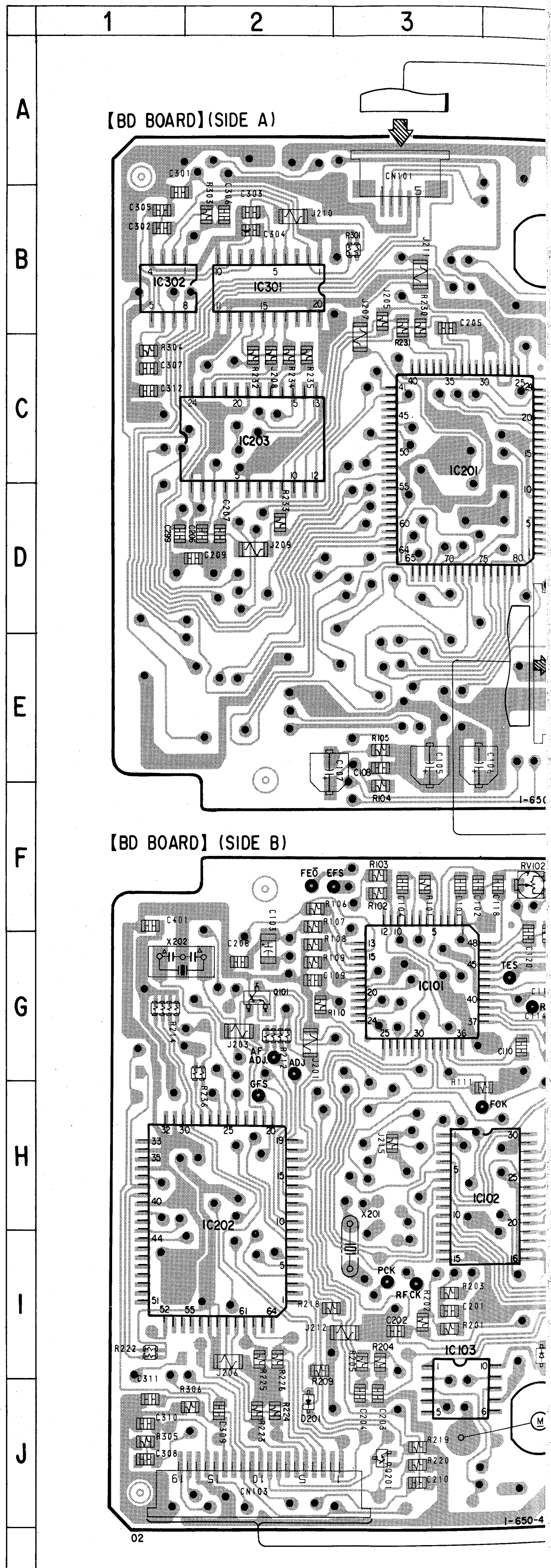
Ref. No.	Location
D101	I-4
D202	J-2
IC101	G-3
IC102	H-3
IC103	I-3
IC201	C-3
IC202	H-2
IC203	C-2
IC301	B-2
IC302	B-1
Q101	G-2
Q201	J-3

Note:

- ● : Through hole.
- ░ : Pattern of the rear side.
- ☐ : Chip components extracted from the rear side.

4-8. PRINTED WIRING BOARDS – CD SECTION –

● Ref

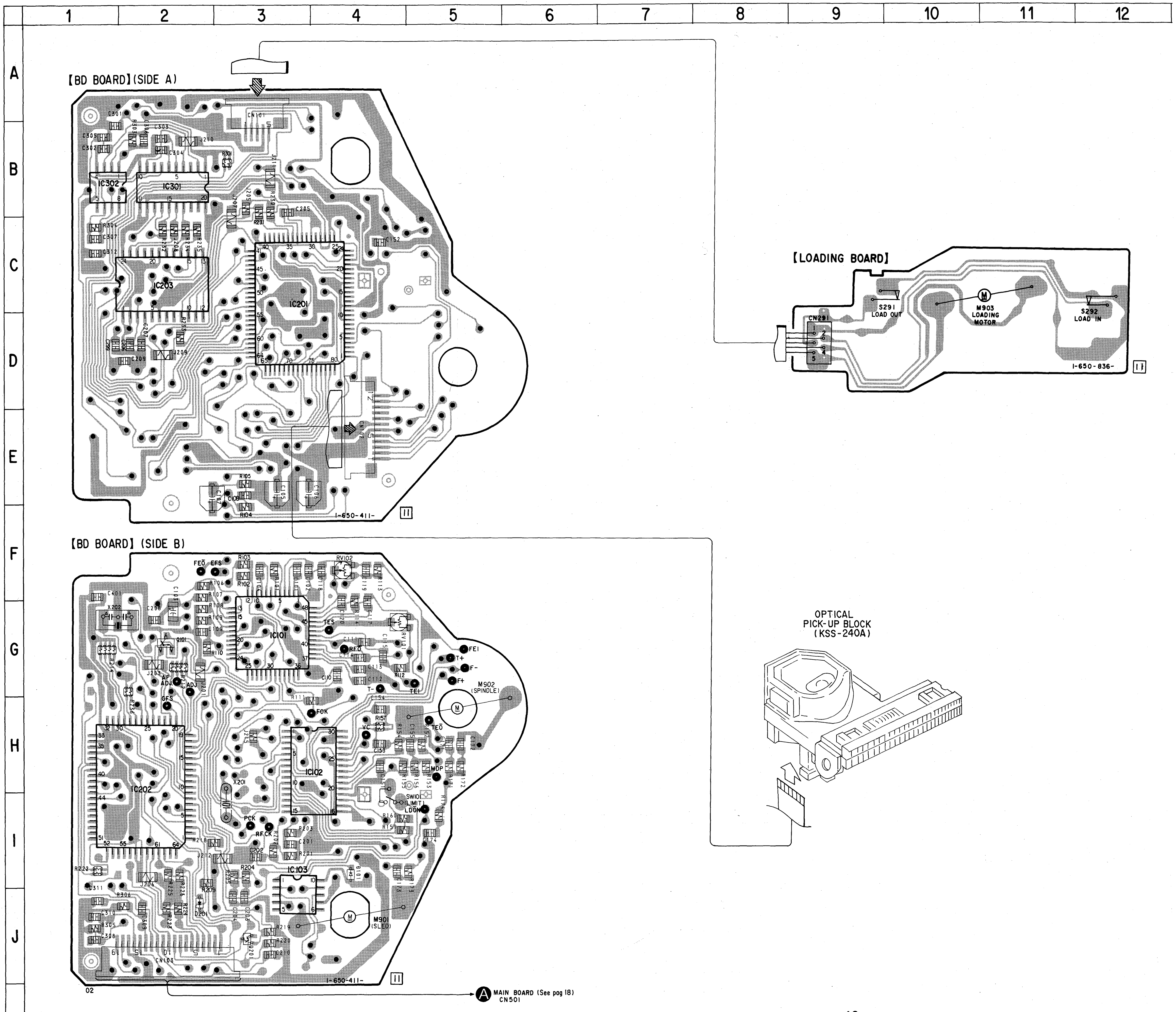

1
2
3
A
B
C
D
E
F
G
H
I
J
【BD BOARD】(SIDE A)
CN101
IC302
IC301
IC203
IC201
【BD BOARD】(SIDE B)
FEO
EFS
TES
IC101
FOK
IC202
IC102
PCK
RFCK
IC103
CN103
1-650
1-650-4

4-8. PRINTED WIRING BOARDS – CD SECTION –

• Refer to page 35 for Semiconductor Lead Layouts.

• SEMICONDUCTOR LOCATION

Ref. No.	Location
D101	I-4
D202	J-2
IC101	G-3
IC102	H-3
IC103	I-3
IC201	C-3
IC202	H-2
IC203	C-2
IC301	B-2
IC302	B-1
Q101	G-2
Q201	J-3

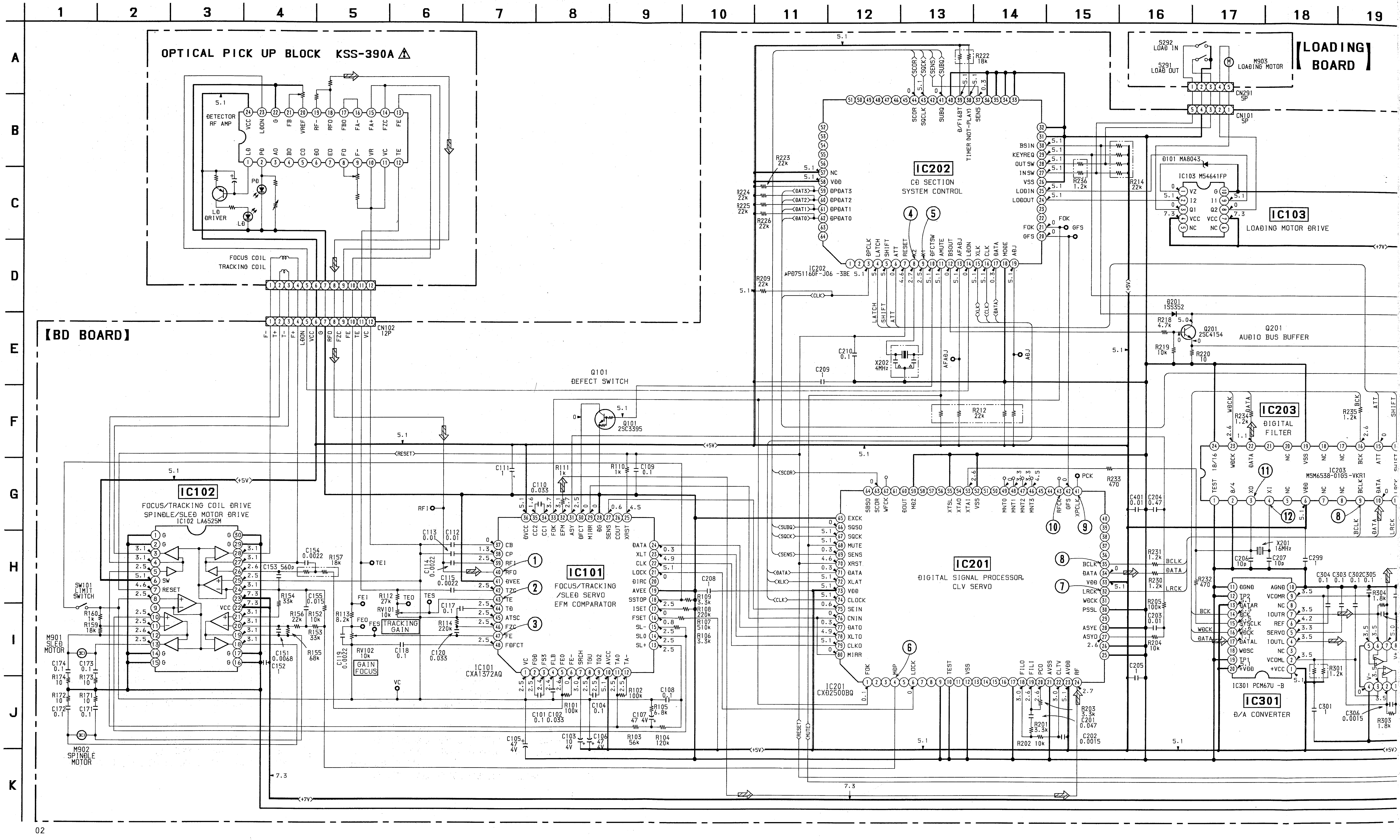

1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
I
J
[BD BOARD] (SIDE A)
CN101
IC302
IC301
IC203
IC201
C152
1-650-411-
[BD BOARD] (SIDE B)
FEO
EFS
RV102
RV101
IC101
TES
RFO
FEI
T+
F-
F+
TEI
T-
M902 (SPINDLE)
FOK
VC
TEO
MDP
SW101 (LIMIT)
LDON
IC102
IC202
X201
X202
Q101
PCK
RFCK
IC103
M901 (SLED)
CN103
1-650-411-
A MAIN BOARD (See pag 18) CN501
[LOADING BOARD]
CN291
S291 LOAD OUT
M903 LOADING MOTOR
S292 LOAD IN
1-650-836-
OPTICAL PICK-UP BLOCK (KSS-240A)

Note:

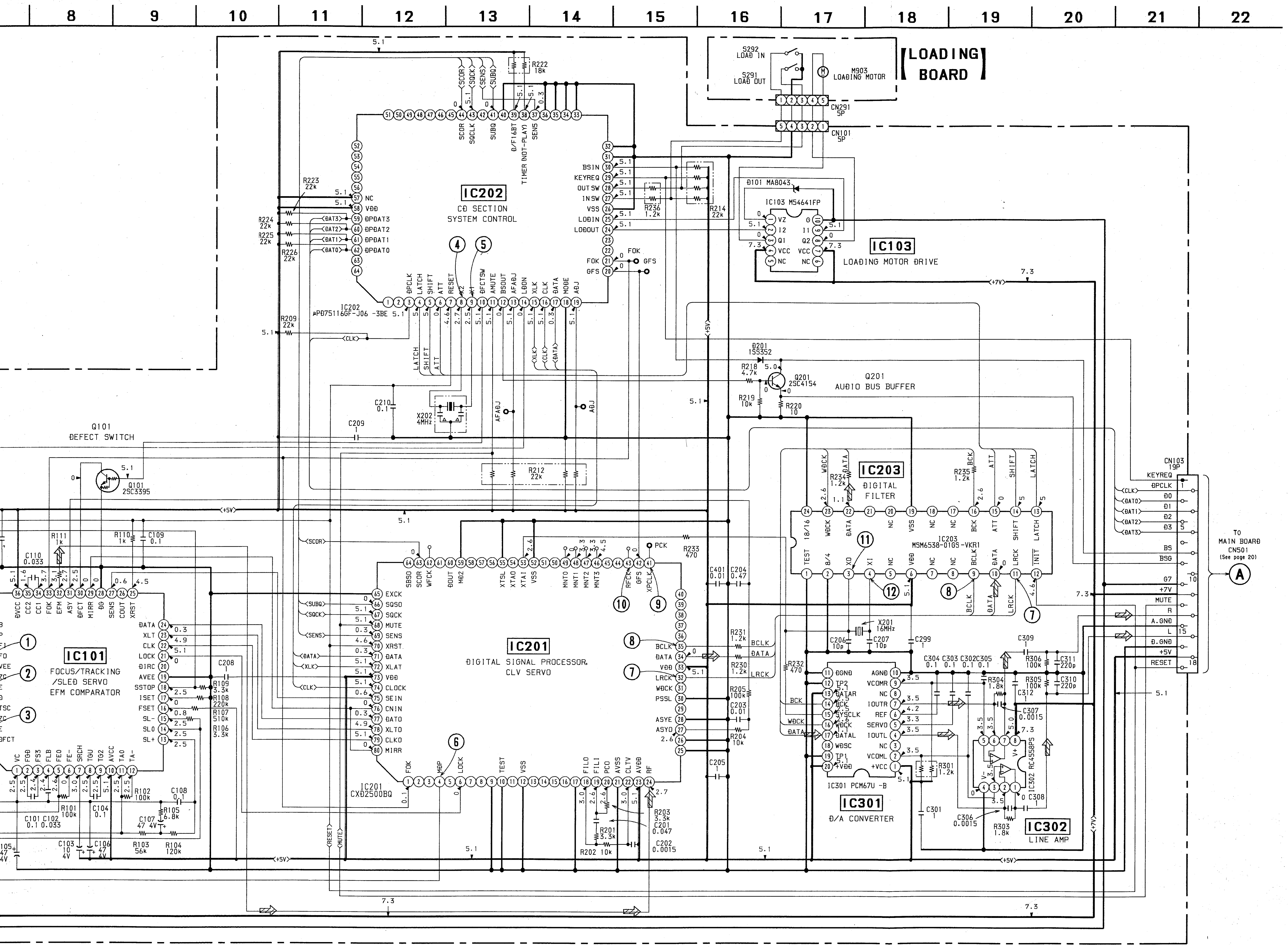
- ● : Through hole.
- ░ : Pattern of the rear side.
- ☐ : Chip components extracted from the rear side.

4-9. SCHEMATIC DIAGRAM – CD SECTION –

- Refer to page 46 for Waveform.



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
A
B
C
D
E
F
G
H
I
J
K
OPTICAL PICK UP BLOCK KSS-390A ⚠
DETECTOR RF AMP
LD DRIVER
PD
LD
FOCUS COIL
TRACKING COIL
【BD BOARD】
CN102 12P
Q101 DEFECT SWITCH
Q101 2SC3395
IC102
FOCUS/TRACKING COIL DRIVE
SPINDLE/SLED MOTOR DRIVE
IC102 LA6525M
S101 LIMIT SWITCH
M901 SLED MOTOR
M902 SPINDLE MOTOR
IC101
FOCUS/TRACKING /SLED SERVO EFM COMPARATOR
IC101 CXA1372AQ
TRACKING GAIN
GAIN FOCUS
RV101 10k
RV102 10k
IC202
CD SECTION SYSTEM CONTROL
IC202 μPD75116GF-J06-3BE
TIMER (NOT-PLAY)
IC201
DIGITAL SIGNAL PROCESSOR, CLV SERVO
IC201 CXD2500BQ
X202 4MHz
【LOADING BOARD】
S292 LOAD IN
S291 LOAD OUT
M903 LOADING MOTOR
CN291 5P
CN101 5P
D101 MA8043
IC103 M54641FP
IC103
LOADING MOTOR DRIVE
D201 1SS352
Q201 2SC4154
Q201 AUDIO BUS BUFFER
IC203
DIGITAL FILTER
IC203 MSM6538-01GS-VKR1
X201 16MHz
IC301 PCM67U -B
IC301
D/A CONVERTER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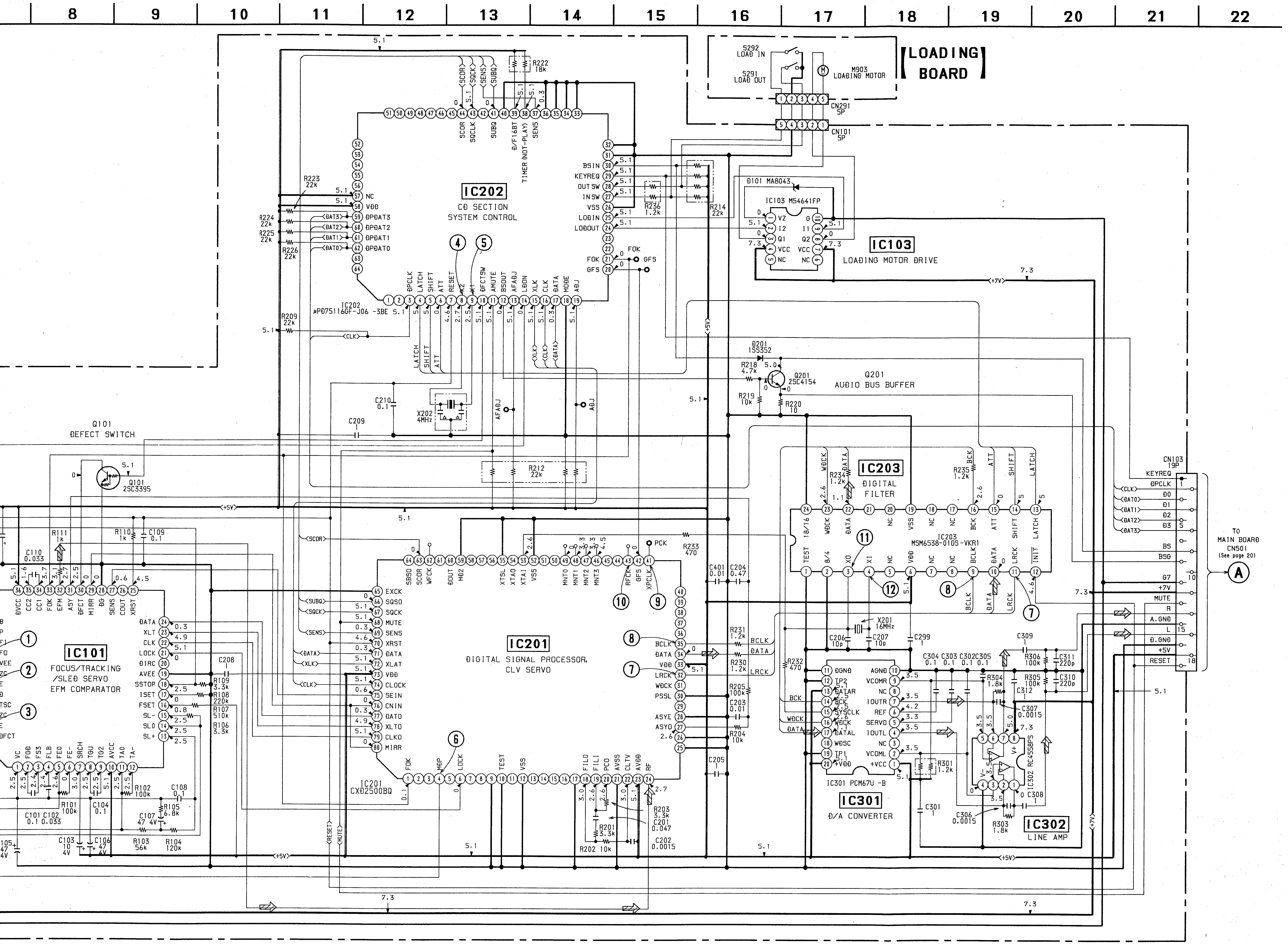
22
LOADING BOARD
S292 LOAD IN
S291 LOAD OUT
M903 LOADING MOTOR
CN291 5P
CN101 5P
IC202
CD SECTION SYSTEM CONTROL
IC202 µPD75116GF-J06-3BE
R222 18k
R223 22k
R224 22k
R225 22k
R226 22k
R209 22k
R236 1.2k
R214 22k
D101 MA8043
IC103 M54641FP
IC103
LOADING MOTOR DRIVE
X202 4MHz
C210 0.1
C209 1
R212 22k
Q101 DEFECT SWITCH
Q101 2SC3395
D201 1SS352
R218 4.7k
Q201 2SC4154
Q201 AUDIO BUS BUFFER
R219 10k
R220 10
IC203
DIGITAL FILTER
IC203 MSM6538-01GS-VKR1
R234 1.2k
R235 1.2k
IC101
FOCUS/TRACKING /SLED SERVO EFM COMPARATOR
IC201
DIGITAL SIGNAL PROCESSOR, CLV SERVO
IC201 CXD2500BQ
R233 470
C401 0.01
C204 0.47
R231 1.2k
R230 1.2k
R232 470
R205 100k
C203 0.01
R204 10k
C205 1
X201 16MHz
C206 10p
C207 10p
C299 1
IC301 PCM67U-B
IC301
D/A CONVERTER
IC302 RC4558PS
IC302
LINE AMP
CN103 19P
TO MAIN BOARD CN501 (See page 20)
A
KEYREQ
DPCLK
D0
D1
D2
D3
BS
BSG
G7
+7V
MUTE
R
A.GND
L
D.GND
+5V
RESET
(+5V)
(+7V)
5.1
7.3
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

Note :

- All capacitors are in µ F unless otherwise noted. pF: µ µ F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬ : B+ Line
- ▬ ▬ ▬ : B − Line
- ☐ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark : STOP
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : CD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21
22
LOADING BOARD
S292 LOAD IN
S291 LOAD OUT
M903 LOADING MOTOR
CN291 5P
CN101 5P
IC202
CD SECTION SYSTEM CONTROL
IC202 μPD75116GF-J06-3BE
R222 18k
R223 22k
R224 22k
R225 22k
R226 22k
R209 22k
R236 1.2k
R214 22k
D101 MA8043
IC103 M54641FP
IC103
LOADING MOTOR DRIVE
D201 1SS352
R218 4.7k
Q201 2SC4154
Q201
AUDIO BUS BUFFER
R219 10k
R220 10
C210 0.1
C209
X202 4MHz
R212 22k
Q101
DEFECT SWITCH
Q101 2SC3395
IC101
FOCUS/TRACKING /SLED SERVO EFM COMPARATOR
IC201
DIGITAL SIGNAL PROCESSOR, CLV SERVO
IC201 CXD2500BQ
IC203
DIGITAL FILTER
IC203 MSM6538-01GS-VKR1
X201 16MHz
IC301 PCM67U-B
IC301
D/A CONVERTER
IC302 RC4558PS
IC302
LINE AMP
CN103 19P
KEYREQ
DPCLK
D0
D1
D2
D3
B5
BSG
G7
+7V
MUTE
R
A.GND
L
D.GND
+5V
RESET
TO MAIN BOARD CN501 (See page 20)
A
+5V
+7V
5.1
7.3

Note :

- All capacitors are in μ F unless otherwise noted. pF: μ μ F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬▬ : B+ Line
- ▬ ▬ ▬ : B − Line
- ☐ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark : STOP
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : CD

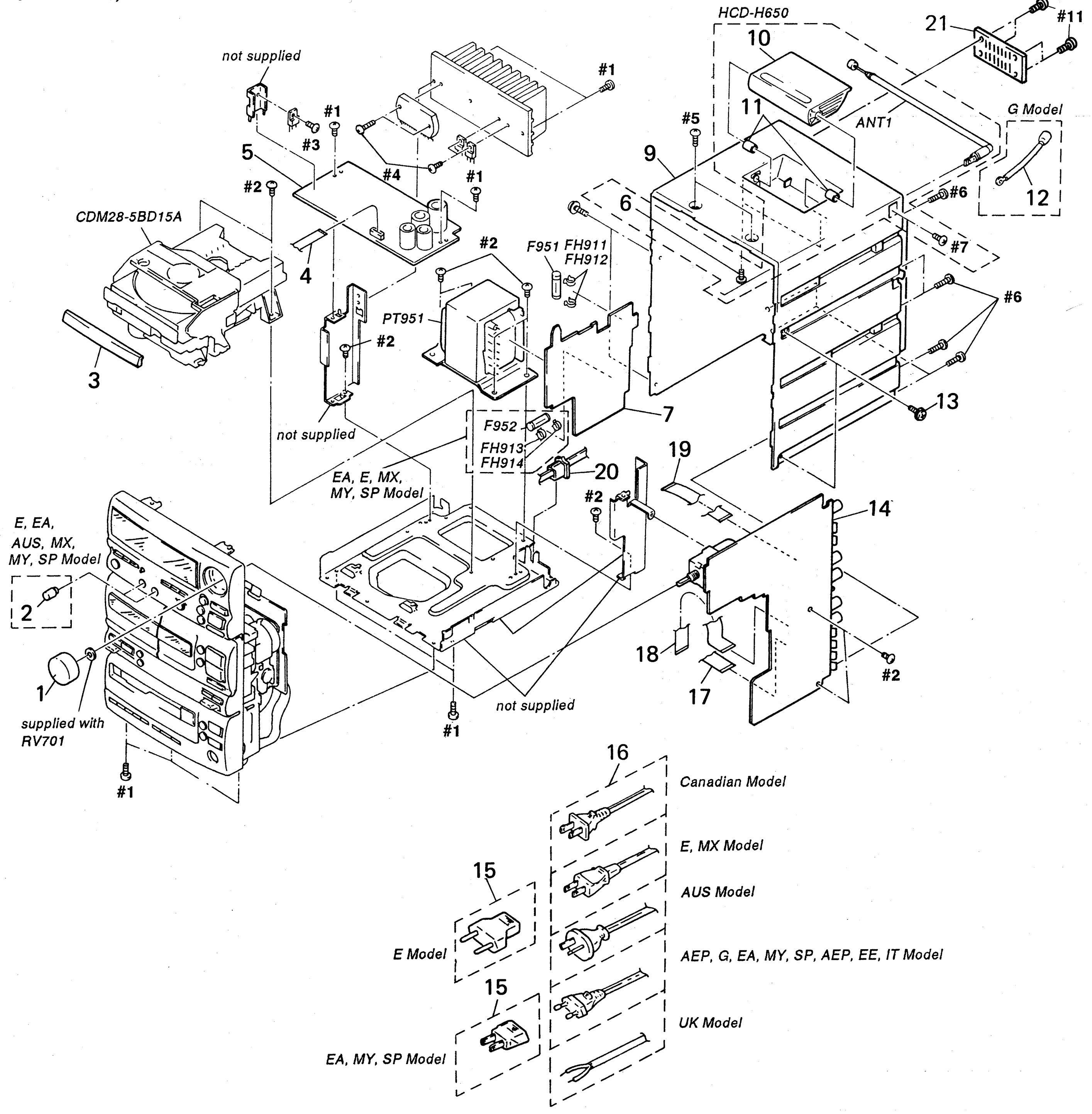
SECTION 5
EXPLODED VIEWS

NOTE :
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Color indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE)....(RED)
  ↑ Parts color ↑ Cabinet's color
- Items marked " ∗ "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (♯ mark) list and accessories and packing materials are given in the last of this parts list.
- AUS : Australian
  G : German
  IT : Italian
  MX : Mexican
  EA : Saudi Arabia
  EE : East European
  MY : Malaysia
  SP : Singapore

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

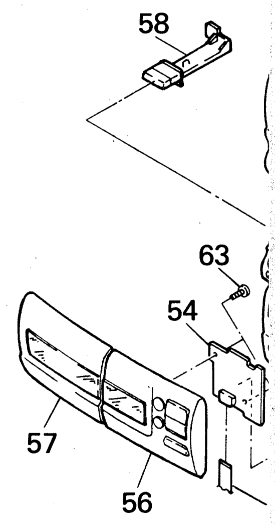
5-1. CASE, POWER SECTION



Ref. No.	Part No.	Description	Remark
1	4-964-858-01	KNOB (V)	
2	4-963-744-01	KNOB(E, AUS, EA, MX, MY, SP)	
3	4-963-286-11	PANEL, LOADING	
4	1-751-965-21	WIRE (FLAT TYPE) (7 CORE)	
∗ 5	A-4365-992-A	POWER BOARD, COMPLETE(Canadian)	
∗ 5	A-4369-000-A	POWER BOARD, COMPLETE(AEP, EE)	
∗ 5	A-4369-008-A	POWER BOARD, COMPLETE(G, IT)	
∗ 5	A-4369-020-A	POWER BOARD, COMPLETE(UK)	
∗ 5	A-4369-044-A	POWER BOARD, COMPLETE(E, AUS, EA, MX, MY, SP)	
6	4-951-620-01	SCREW (2.6X8), +BVTP	
∗ 7	1-651-089-11	PS BOARD	
∗ 9	4-963-306-31	CASE(H650M)	
∗ 9	4-964-234-01	CASE (FH)(E, EA, MX, MY, SP)	
∗ 9	4-964-234-11	CASE (FH)(H650:AEP, G)	
∗ 9	4-964-234-21	CASE (FH)(AUS)	
∗ 10	4-963-673-01	HANDLE(H650)	
∗ 11	4-963-672-01	COLLAR(H650)	
12	1-501-594-21	ANTENNA (FM)(G)	
13	3-704-366-01	SCREW (CASE) (M3X8)	
∗ 14	A-4365-991-A	MAIN BOARD, COMPLETE(Canadian)	
∗ 14	A-4365-999-A	MAIN BOARD, COMPLETE(AEP)	
∗ 14	A-4369-007-A	MAIN BOARD, COMPLETE(G, IT)	
∗ 14	A-4369-019-A	MAIN BOARD, COMPLETE(UK)	
∗ 14	A-4369-043-A	MAIN BOARD, COMPLETE(E, AUS, EA, MX, MY, SP)	
∗ 14	A-4369-056-A	MAIN BOARD, COMPLETE(EE)	

Ref. No.	Part No.	Description	Remark
⚠15	1-569-007-11	ADAPTER, CONVERSION 2P(E)	
⚠15	1-569-008-11	ADAPTER, CONVERSION 2P(EA, MY, SP)	
⚠16	1-575-651-11	CORD, POWER(AEP, EA, MY, SP, EE)	
⚠16	1-575-653-11	CORD, POWER(E, MX)	
⚠16	1-590-042-11	CORD, POWER (WITH CORE)(G, IT)	
⚠16	1-690-609-11	CORD, POWER(Canadian)	
⚠16	1-696-570-21	CORD, POWER(UK)	
⚠16	1-696-848-21	CORD, POWER(AUS)	
17	1-751-960-21	WIRE (FLAT TYPE) (19 CORE)	
18	1-765-142-21	WIRE (FLAT TYPE) (17 CORE)	
19	1-751-962-11	WIRE (FLAT TYPE) (11 CORE)	
∗ 20	3-703-244-00	BUSHING (2104), CORD(EXCEPT E, MX)	
∗ 20	3-703-571-11	BUSHING (S) (4516), CORD(E, MX)	
21	4-966-056-01	SHEET, PROTECTION (FH)(AEP, MX, MY, SP)	
ANT1	1-501-321-51	ANTENNA, TELESCOPIC(H650)	
⚠F951	1-532-215-00	FUSE(T800mA/250V)(EXCEPT Canadian)	
⚠F951	1-576-104-11	FUSE(2A/250V)(Canadian)	
⚠F952	1-532-259-00	FUSE(T1.6A/250V)(E, EA, MX, MY, SP)	
∗ FH911	1-533-293-11	FUSE HOLDER	
∗ FH912	1-533-293-11	FUSE HOLDER	
∗ FH913	1-533-293-11	FUSE HOLDER(E, EA, MX, MY, SP)	
∗ FH914	1-533-293-11	FUSE HOLDER(E, EA, MX, MY, SP)	
⚠PT951	1-423-966-11	TRANSFORMER, POWER(Canadian)	
⚠PT951	1-423-967-11	TRANSFORMER, POWER(AEP, G, IT, EE)	
⚠PT951	1-423-968-11	TRANSFORMER, POWER(AUS, UK)	
⚠PT951	1-423-969-11	TRANSFORMER, POWER(E, EA, MX, MY, SP)	

5-2. FRONT PANEL



Ref. No.	Part No.
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51	X-4944-433-
51	X-4944-436-
52	4-930-336-8
53	4-964-315-1
∗ 54	1-651-088-1
55	1-751-964-1
56	X-4944-411-
57	X-4944-410-
58	4-965-452-0
∗ 59	4-932-810-1
60	4-963-277-1
∗ 61	A-4365-998-
∗ 61	A-4369-006-
∗ 61	A-4369-014-
∗ 61	A-4369-026-
∗ 61	A-4369-050-
∗ 61	A-4369-052-

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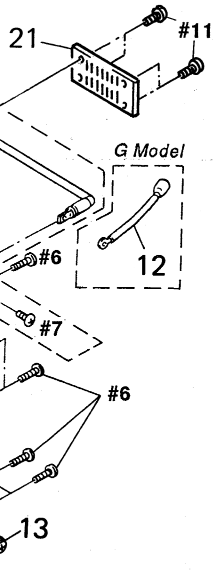

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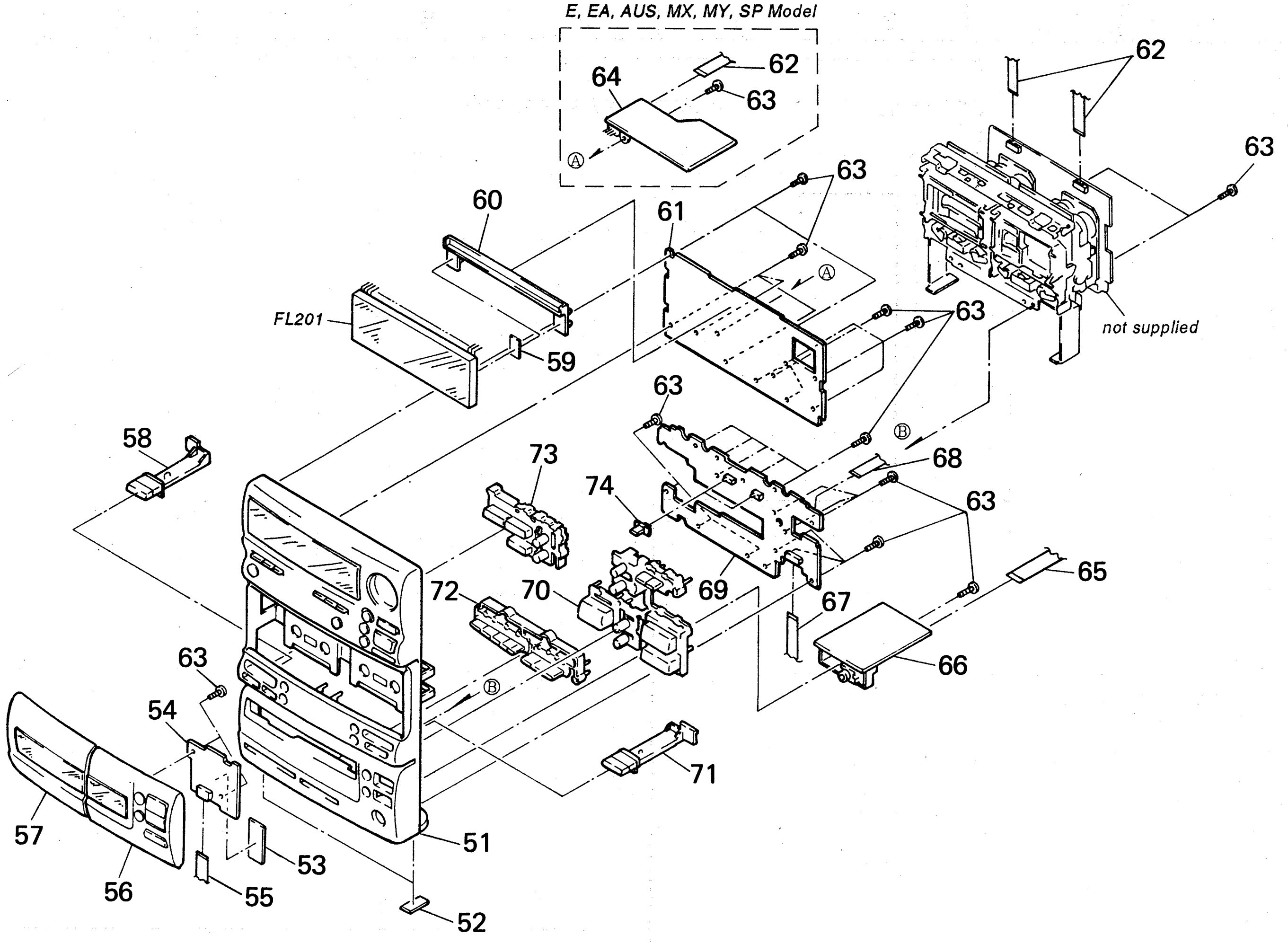
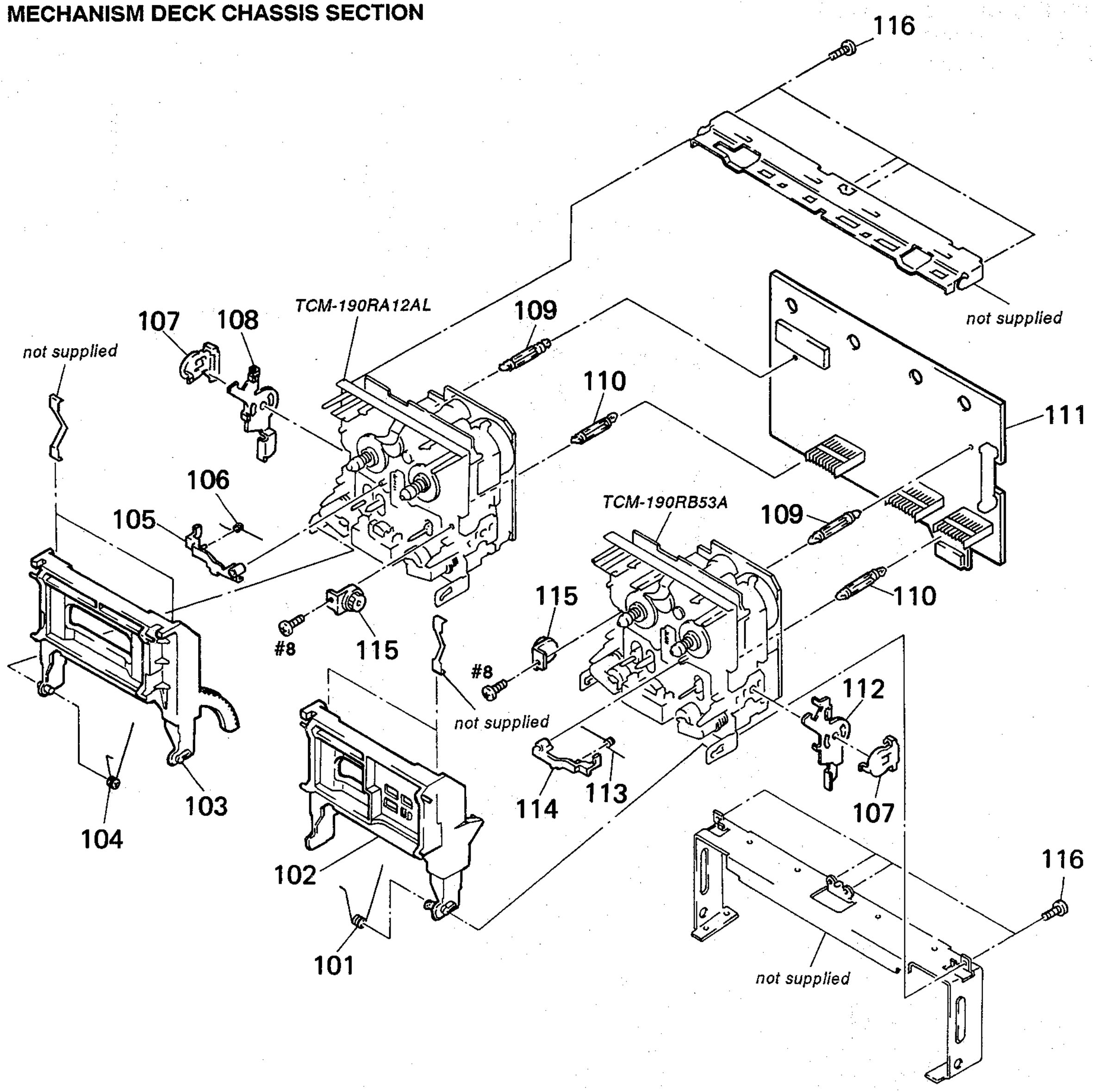
Ref. No.	Part No.	Description	Remark
1	4-964-858-01	KNOB (V)	
2	4-963-744-01	KNOB(E, AUS, EA, MX, MY, SP)	
3	4-963-286-11	PANEL, LOADING	
4	1-751-965-21	WIRE (FLAT TYPE) (7 CORE)	
* 5	A-4365-992-A	POWER BOARD, COMPLETE(Canadian)	
* 5	A-4369-000-A	POWER BOARD, COMPLETE(AEP, EE)	
* 5	A-4369-008-A	POWER BOARD, COMPLETE(G, IT)	
* 5	A-4369-020-A	POWER BOARD, COMPLETE(UK)	
* 5	A-4369-044-A	POWER BOARD, COMPLETE(E, AUS, EA, MX, MY, SP)	
6	4-951-620-01	SCREW (2.6X8), +BVTP	
* 7	1-651-089-11	PS BOARD	
* 9	4-963-306-31	CASE(H650M)	
* 9	4-964-234-01	CASE (FH)(E, EA, MX, MY, SP)	
* 9	4-964-234-11	CASE (FH)(H650:AEP, G)	
* 9	4-964-234-21	CASE (FH)(AUS)	
* 10	4-963-673-01	HANDLE(H650)	
* 11	4-963-672-01	COLLAR(H650)	
12	1-501-594-21	ANTENNA (FM)(G)	
13	3-704-366-01	SCREW (CASE) (M3X8)	
* 14	A-4365-991-A	MAIN BOARD, COMPLETE(Canadian)	
* 14	A-4365-999-A	MAIN BOARD, COMPLETE(AEP)	
* 14	A-4369-007-A	MAIN BOARD, COMPLETE(G, IT)	
* 14	A-4369-019-A	MAIN BOARD, COMPLETE(UK)	
* 14	A-4369-043-A	MAIN BOARD, COMPLETE(E, AUS, EA, MX, MY, SP)	
* 14	A-4369-056-A	MAIN BOARD, COMPLETE(EE)	
⚠15	1-569-007-11	ADAPTER, CONVERSION 2P(E)	
⚠15	1-569-008-11	ADAPTER, CONVERSION 2P(EA, MY, SP)	
⚠16	1-575-651-11	CORD, POWER(AEP, EA, MY, SP, EE)	
⚠16	1-575-653-11	CORD, POWER(E, MX)	
⚠16	1-590-042-11	CORD, POWER (WITH CORE)(G, IT)	
⚠16	1-690-609-11	CORD, POWER(Canadian)	
⚠16	1-696-570-21	CORD, POWER(UK)	
⚠16	1-696-848-21	CORD, POWER(AUS)	
17	1-751-960-21	WIRE (FLAT TYPE) (19 CORE)	
18	1-765-142-21	WIRE (FLAT TYPE) (17 CORE)	
19	1-751-962-11	WIRE (FLAT TYPE) (11 CORE)	
* 20	3-703-244-00	BUSHING (2104), CORD(EXCEPT E, MX)	
* 20	3-703-571-11	BUSHING (S) (4516), CORD(E, MX)	
21	4-966-056-01	SHEET, PROTECTION (FH)(AEP, MX, MY, SP)	
ANT1	1-501-321-51	ANTENNA, TELESCOPIC(H650)	
⚠F951	1-532-215-00	FUSE(T800mA/250V)(EXCEPT Canadian)	
⚠F951	1-576-104-11	FUSE(2A/250V)(Canadian)	
⚠F952	1-532-259-00	FUSE(T1.6A/250V)(E, EA, MX, MY, SP)	
* FH911	1-533-293-11	FUSE HOLDER	
* FH912	1-533-293-11	FUSE HOLDER	
* FH913	1-533-293-11	FUSE HOLDER(E, EA, MX, MY, SP)	
* FH914	1-533-293-11	FUSE HOLDER(E, EA, MX, MY, SP)	
⚠PT951	1-423-966-11	TRANSFORMER, POWER(Canadian)	
⚠PT951	1-423-967-11	TRANSFORMER, POWER(AEP, G, IT, EE)	
⚠PT951	1-423-968-11	TRANSFORMER, POWER(AUS, UK)	
⚠PT951	1-423-969-11	TRANSFORMER, POWER(E, EA, MX, MY, SP)	

5-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	X-4944-408-1	PANEL ASSY, FRONT(E, AUS, EA, MX, MY, SP)	
51	X-4944-409-1	PANEL ASSY, FRONT(H650:AEP, G)	
51	X-4944-433-1	PANEL ASSY, FRONT(Canadian)	
51	X-4944-436-1	PANEL ASSY, FRONT(H650M:AE, UK, IT, EE)	
52	4-930-336-81	FOOT (FELT)	
53	4-964-315-11	SHEET, PROTECTION	
* 54	1-651-088-11	TC-SW BOARD	
55	1-751-964-11	WIRE (FLAT TYPE) (7 CORE)	
56	X-4944-411-1	LID (B) ASSY, CASSETTE	
57	X-4944-410-1	LID (A) ASSY, CASSETTE	
58	4-965-452-01	BUTTON (E) (L)	
* 59	4-932-810-11	CUSHION (FL)	
60	4-963-277-11	HOLDER (FL)	
* 61	A-4365-998-A	DISPLAY BOARD, COMPLETE(Canadian)	
* 61	A-4369-006-A	DISPLAY BOARD, COMPLETE(AEP)	
* 61	A-4369-014-A	DISPLAY BOARD, COMPLETE(G)	
* 61	A-4369-026-A	DISPLAY BOARD, COMPLETE(UK)	
* 61	A-4369-050-A	DISPLAY BOARD, COMPLETE (E, AUS, EA, MX, MY, SP)	
* 61	A-4369-052-A	DISPLAY BOARD, COMPLETE(IT)	
* 61	A-4369-057-A	DISPLAY BOARD, COMPLETE(EE)	
62	1-590-241-11	WIRE, FLAT TYPE (7 CORE)	
63	4-951-620-01	SCREW (2.6X8), +BVTP	
* 64	A-4369-051-A	ECHO BOARD, COMPLETE(E, AUS, EA, MX, MY, SP)	
65	1-751-961-21	WIRE (FLAT TYPE) (9 CORE)	
* 66	1-651-085-11	JACK BOARD	
67	1-751-963-11	WIRE (FLAT TYPE) (18 CORE)	
68	1-751-964-11	WIRE (FLAT TYPE) (7 CORE)	
* 69	A-4365-995-A	SW BOARD, COMPLETE(Canadian)	
* 69	A-4369-003-A	SW BOARD, COMPLETE(AEP, EE)	
* 69	A-4369-011-A	SW BOARD, COMPLETE(G, IT)	
* 69	A-4369-023-A	SW BOARD, COMPLETE(UK)	
* 69	A-4369-047-A	SW BOARD, COMPLETE(E, AUS, EA, MX, MY, SP)	
70	X-4944-435-1	BUTTON (M2) ASSY	
71	4-965-453-01	BUTTON (E) (R)	
72	4-963-655-01	BUTTON (CDP)	
73	X-4944-434-1	BUTTON (M1) ASSY	
74	4-963-284-11	KNOB (S)	
FL201	1-517-247-11	INDICATOR TUBE, FLUORESCENT	

5-3. MECHANISM DECK CHASSIS SECTION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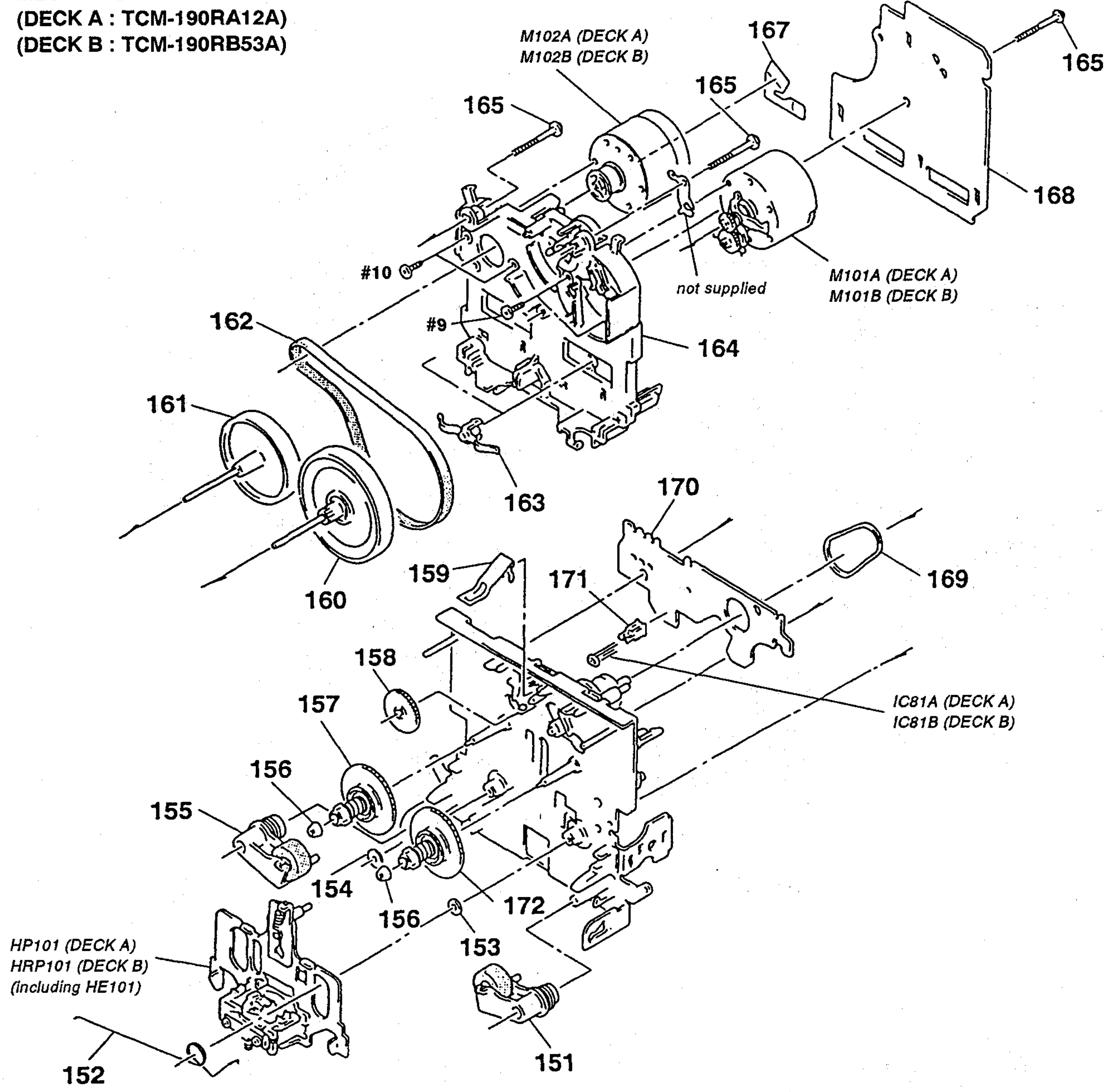
not supplied
TCM-190RA12AL
107
108
109
110
111
not supplied
106
105
TCM-190RB53A
109
110
115
#8
115
#8
not supplied
112
103
104
102
101
114
113
107
116
not supplied

Ref. No.	Part No.	Description	Remark
101	4-959-232-11	SPRING (R), TORSION	
102	X-4944-416-1	HOLDER (R) ASSY, CASSETTE	
103	X-4944-415-1	HOLDER (L) ASSY, CASSETTE	
104	4-959-231-11	SPRING (L), TORSION	
105	3-354-955-01	LEVER (EJ SAFTY LEVER L)	
106	3-354-961-01	SPRING (EJ SAFTY SPRING L)	
107	3-354-957-01	JOINT (LOCK LEVER)	
* 108	3-367-709-21	LEVER (LOCK LEVER L)	
* 109	4-965-065-11	HOLDER, PCB	
* 110	4-965-065-01	HOLDER, PCB	

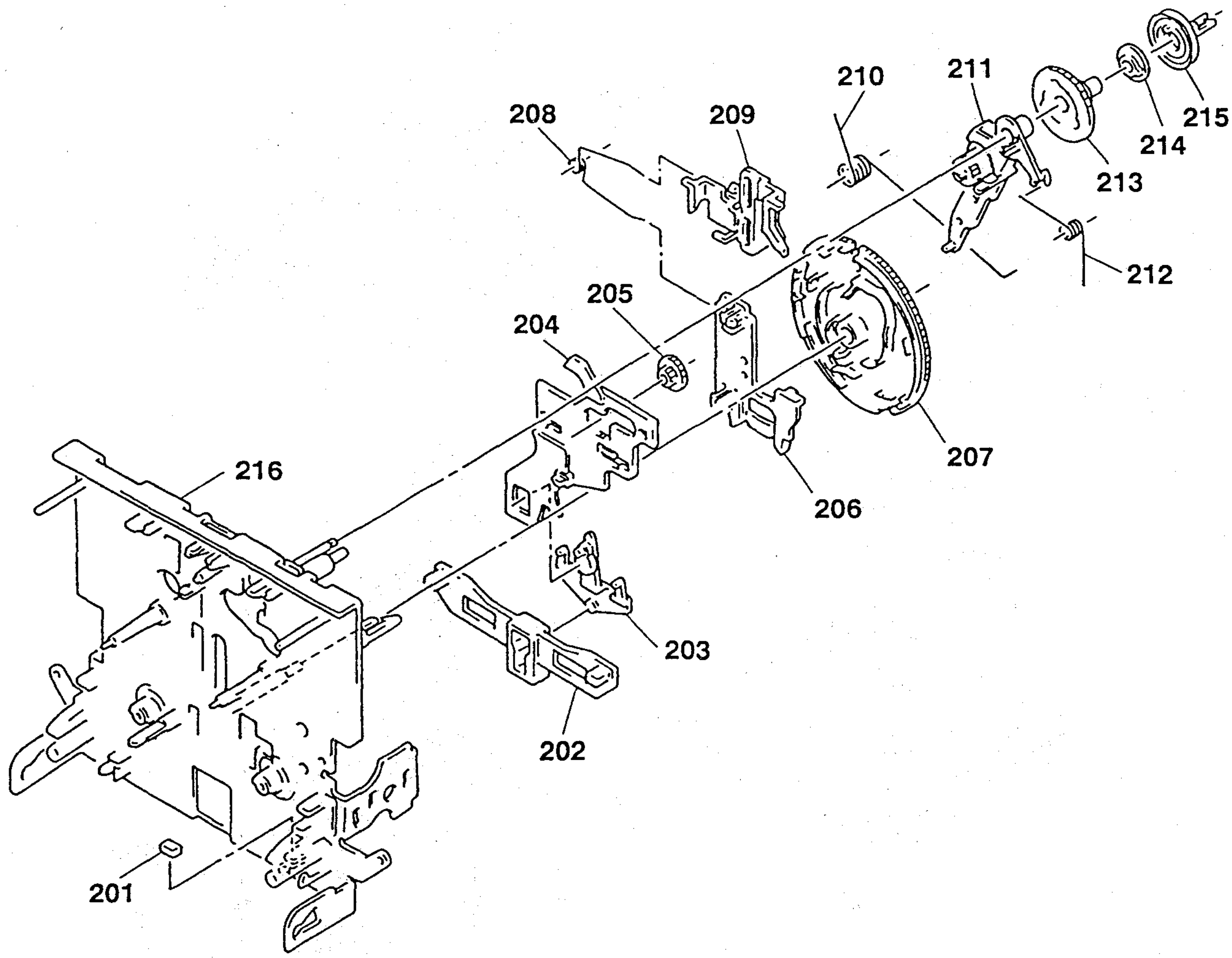
Ref. No.	Part No.	Description	Remark
* 111	A-4365-994-A	TC BOARD, COMPLETE(Canadian)	
* 111	A-4369-002-A	TC BOARD, COMPLETE(AEP, EE)	
* 111	A-4369-010-A	TC BOARD, COMPLETE(G, IT)	
* 111	A-4369-022-A	TC BOARD, COMPLETE(UK)	
* 111	A-4369-046-A	TC BOARD, COMPLETE(E, AUS, EA, MX, MY, SP)	
* 112	3-367-710-21	LEVER (LOCK LEVER R)	
113	3-354-962-01	SPRING (EJ SAFTY SPRING R)	
114	3-354-956-01	LEVER (EJ SAFTY LEVER R)	
115	3-354-963-01	DAMPER	
116	4-951-620-01	SCREW +BVTP 2.6×8	

5-4. MECHANISM DECK SECTION-1
(DECK A : TCM-190RA12A)
(DECK B : TCM-190RB53A)


M102A (DECK A)
M102B (DECK B)
167
165
165
165
168
#10
not supplied
M101A (DECK A)
M101B (DECK B)
#9
162
164
161
163
170
159
171
169
160
158
IC81A (DECK A)
IC81B (DECK B)
157
156
155
154
172
156
153
HP101 (DECK A)
HRP101 (DECK B)
(including HE101)
152
151

Ref. No.	Part No.	Description	Remark
151	X-3366-047-1	LEVER (PINCH F) ASSY	
152	3-907-362-11	SPRING, TORSION	
153	3-356-713-01	WASHER	
154	3-356-714-01	WASHER	
155	X-3366-048-1	LEVER (PINCH R) ASSY	
156	3-913-841-01	CAP (REEL)	
157	X-3366-971-1	TABLE ASSY (B), REEL	
158	3-359-424-11	GEAR (REV GEAR)	
159	3-359-430-01	SPRING(CASSETTE RETAINER),LEAF	
160	X-3367-629-1	FLYWHEEL (FWD) ASSY	
161	X-3367-630-2	FLYWHEEL (REV) ASSY	
162	3-359-417-01	BELT (FLAT), CAPSTAN	
163	3-575-321-00	RETAINER, THRUST, CAPSTAN	
164	3-359-436-11	BASE (THRUST RETAINER),FITTING	
165	3-359-414-01	SCREW (+PTPWH 2X23)	
167	1-638-983-11	PC BOARD, MOTOR FLEXIBLE	
* 168	A-2006-623-A	MD(AX)BOARD, COMPLETE (DECK A)	
* 168	A-2007-134-A	MD(BX)BOARD, COMPLETE (DECK B)	
169	3-359-466-11	BELT (FR), SQUARE	
170	1-638-020-11	SW-A BOARD(DECK A)	
170	1-638-020-11	SW-B BOARD(DECK B)	
171	3-343-419-01	HOLDER(S SENSOR A)	
172	X-3366-970-1	TABLE ASSY, REEL	
M101A	X-3363-501-1	MOTOR ASSY(REEL)(DECK A)	
M101B	X-3363-501-1	MOTOR ASSY(REEL)(DECK B)	
M102A	X-3365-377-1	MOTOR ASSY(CAPSTAN)(DECK A)	
M102B	X-3365-377-1	MOTOR ASSY(CAPSTAN)(DECK B)	
HP101	A-2003-757-A	BASE ASSY, HEAD(DECK A)	
HRP101	A-2003-930-A	BASE ASSY, HEAD(DECK B)	

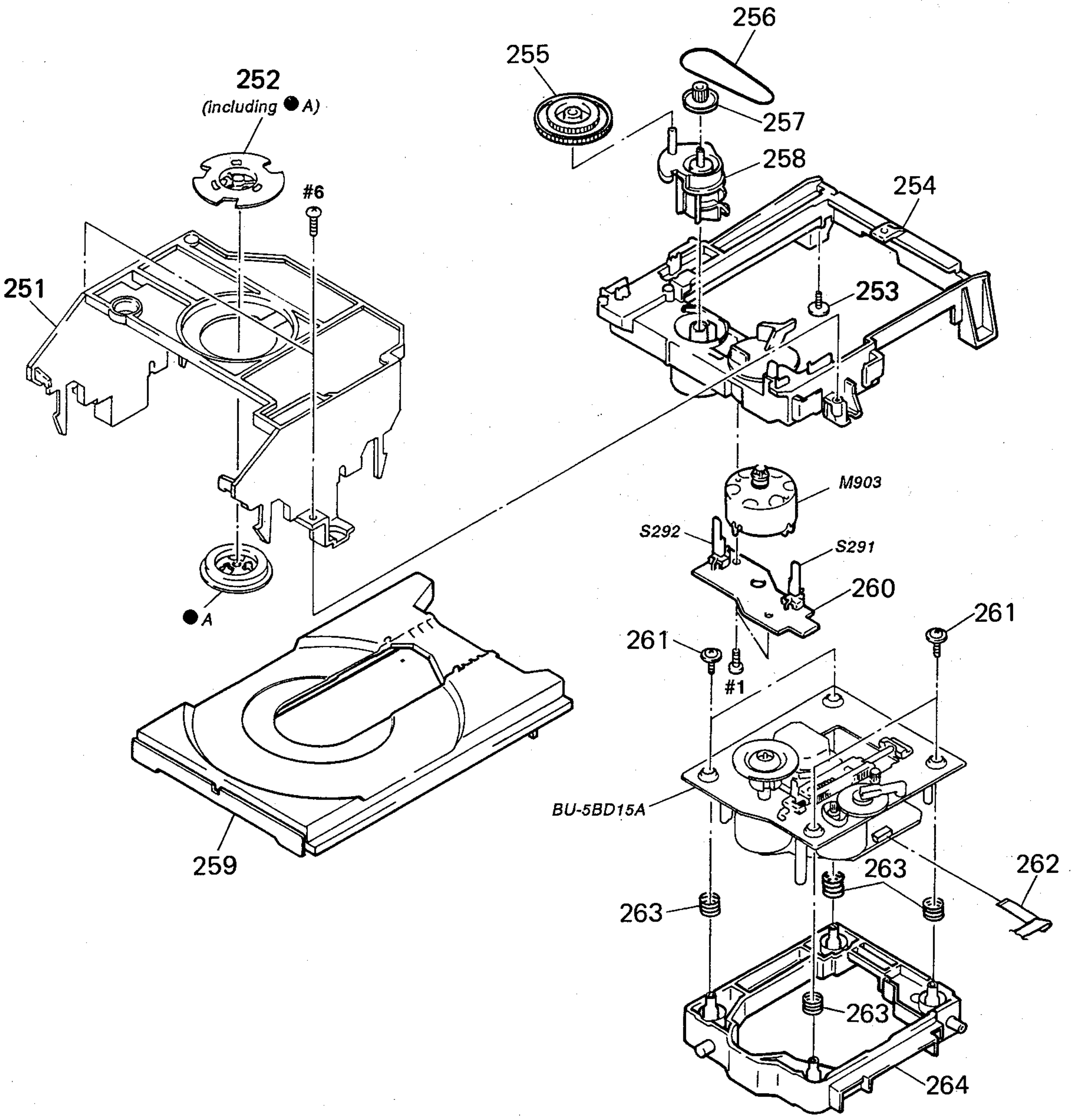
5-5. MECHANISM DECK SECTION-2
(DECK A : TCM-190RA12A)
(DECK B : TCM-190RB53A)



Ref. No.	Part No.	Description	Remark
201	3-359-469-01	SPACER	
* 202	3-359-425-01	SLIDER (REVERSE SLIDER)	
203	3-359-426-01	LEVER (REVERSE LEVER)	
* 204	3-359-415-01	SLIDER (TRIGGER SLIDER)	
204	3-359-415-11	SLIDER (TRIGGER SLIDER)	
205	3-359-448-11	GEAR (TRIGGER)	
* 206	3-359-427-01	SLIDER (LEVERSE SLIDER)	
207	3-359-420-11	GEAR (CAM GEAR)	
208	3-359-454-01	SPRING, TORSION	

Ref. No.	Part No.	Description	Remark
209	3-359-429-01	SLIDER (BRAKE PLATE)	
210	3-359-456-01	SPRING(TRIGGER SPRING), TORSION	
211	X-3366-569-1	ARM ASSY, FR	
212	3-359-453-01	SPRING (FR ARM), TORSION	
213	3-359-419-11	GEAR (FR GEAR)	
214	3-359-421-11	CLUTCH (REEL DISK)	
215	3-359-418-11	PULLEY (FR PULLEY)	
216	X-3359-415-1	CHASSIS ASSY, MECHANICAL(DECK A)	
216	X-3363-790-1	CHASSIS ASSY, MECHANICAL(DECK B)	

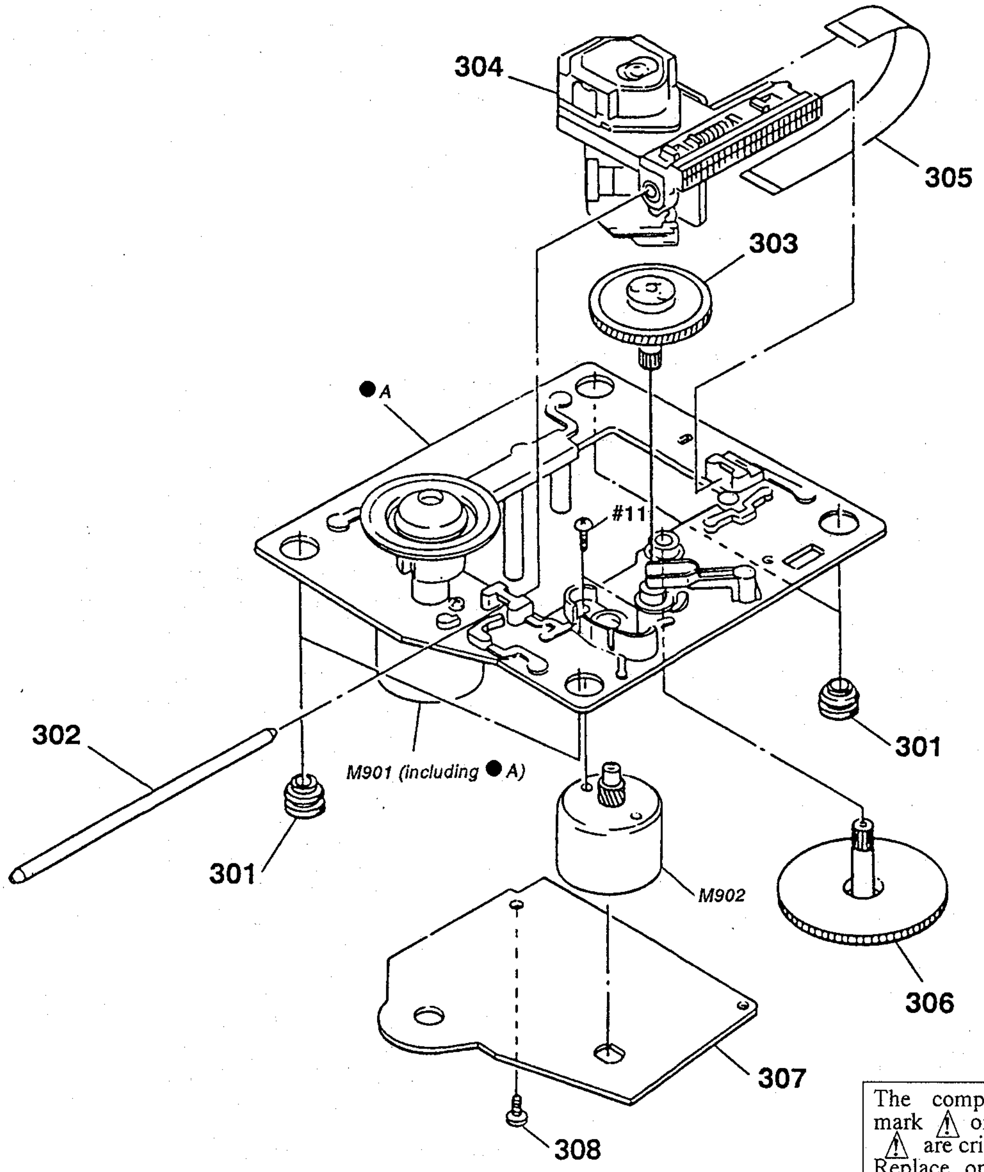
5-6. CD MECHANISM SECTION-1
(CDM-28-5BD15)


252
(including ● A)
256
255
257
258
254
#6
251
253
M903
S292
S291
260
261
261
#1
● A
BU-5BD15A
259
263
262
263
263
264

Ref. No.	Part No.	Description	Remark
251	4-960-835-01	HOLDER (M)	
252	1-452-719-11	MAGNET ASSY	
* 253	4-917-583-21	BRACKET, YOKE	
254	4-960-838-01	BASE (MD)	
255	4-960-842-01	GEAR (P)	
256	4-927-649-01	BELT	
257	4-960-841-01	PULLEY (S)	
* 258	4-960-839-01	CAM	
259	4-960-836-01	TABLE, DISK	

Ref. No.	Part No.	Description	Remark
* 260	1-650-836-11	LOADING BOARD	
261	4-933-134-01	SCREW (+PTPWH M2.6X6)	
262	1-751-806-11	WIRE (FLAT TYPE) (5 CORE)	
263	4-959-996-01	SPRING (932), COMPRESSION	
264	4-960-834-01	HOLDER (BU)	
M903	A-4604-363-A	MOTOR (L) ASSY	
S291	1-572-086-11	SWITCH, LEAF(LOAD OUT)	
S292	1-572-086-11	SWITCH, LEAF(LOAD IN)	

5-7. CD MECHANISM SECTION-2
(BU-5BD15A)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
301	4-951-940-01	INSULATOR (BU)	
302	4-917-565-01	SHAFT, SLED	
303	4-917-567-01	GEAR (M)	
⚠304	8-848-144-11	DEVICE, OPTICAL KSS-240A	
305	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
306	4-917-564-01	GEAR (P), FLATNESS	
* 307	A-4673-132-A	BD (A) BOARD, COMPLETE	
308	4-951-620-01	SCREW (2.6X8), +BVTP	
M901	X-4917-504-1	MOTOR ASSY (SLED)	
M902	X-4917-523-1	MOTOR ASSY (SPINDLE)	

BD(A)

SECTION 6
ELECTRICAL PARTS LIST

NOTE :
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal oxide-film resistor
  F : nonflammable

- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ , for example :
  uA.... : μ A.... , uPA.... : μ PA....
  uPB.... : μ PB.... , uPC.... : μ PC....
  uPD.... : μ PD....
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H
- AUS : Australian
  G : German
  IT : Italian
  MX : Mexican
  EA : Saudi Arabia
  EE : Easc European
  MY : Malaysia
  SP : Singapore

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-4673-132-A	BD (A) BOARD, COMPLETE			
		**********************			
		< CAPACITOR >			
C101	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C102	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C103	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C104	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C105	1-126-607-11	ELECT CHIP	47uF	20%	4V
C106	1-126-607-11	ELECT CHIP	47uF	20%	4V
C107	1-126-607-11	ELECT CHIP	47uF	20%	4V
C108	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C109	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C110	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C111	1-164-346-11	CERAMIC CHIP	1uF		16V
C112	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C113	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C114	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C115	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C117	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C118	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C119	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C120	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C151	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C152	1-164-346-11	CERAMIC CHIP	1uF		16V
C153	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C154	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C155	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C171	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C172	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C173	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C174	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C201	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C202	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C203	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C204	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C205	1-164-346-11	CERAMIC CHIP	1uF		16V
C206	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C207	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C208	1-164-346-11	CERAMIC CHIP	1uF		16V
C209	1-164-346-11	CERAMIC CHIP	1uF		16V
C210	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C299	1-164-346-11	CERAMIC CHIP	1uF		16V
C301	1-164-346-11	CERAMIC CHIP	1uF		16V
C302	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C303	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C304	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C305	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C306	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C307	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C308	1-164-346-11	CERAMIC CHIP	1uF		16V
C309	1-164-346-11	CERAMIC CHIP	1uF		16V
C310	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C311	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C312	1-164-346-11	CERAMIC CHIP	1uF		16V
C401	1-164-232-11	CERAMIC CHIP	0.01uF		50V
		< CONNECTOR >			
CN101	1-580-858-11	SOCKET, CONNECTOR (SMT) 5P			
CN102	1-580-866-11	SOCKET, CONNECTOR (SMT) 12P			
CN103	1-580-872-41	SOCKET, CONNECTOR (SMT) 19P			
		< DIODE >			
D101	8-719-421-82	DIODE MA8043-M			
D201	8-719-016-74	DIODE 1SS352			

Ref. No.	Part No.	Description	Remark
		< IC >	
IC101	8-752-053-73	IC CXA1372AQ	
IC101	8-752-058-77	IC CXA1372AQ	
IC102	8-759-823-48	IC LA6525M	
IC103	8-759-636-20	IC M54641FP-TP	
IC201	8-752-352-93	IC CXD2500BQ	
IC201	8-752-351-78	IC CXD2500BQ	
IC202	8-759-248-71	IC uPD75116GF-J06-3BE	
IC203	8-759-098-27	IC MSM6538-01GS-VKR1	
IC301	8-759-155-52	IC PCM-67U-B	
IC302	8-759-100-96	IC UPC4558G2	
IC302	8-759-996-43	IC RC4558PS	
		< JACK >	
J201	1-216-296-91	METAL GLAZE 0 5%	1/8W
J203	1-216-296-91	METAL GLAZE 0 5%	1/8W
J205	1-216-295-00	METAL CHIP 0 5%	1/10W
J206	1-216-296-91	METAL GLAZE 0 5%	1/8W
J207	1-216-296-91	METAL GLAZE 0 5%	1/8W
J208	1-216-295-00	METAL CHIP 0 5%	1/10W
J209	1-216-296-91	METAL GLAZE 0 5%	1/8W
J210	1-216-296-91	METAL GLAZE 0 5%	1/8W
J211	1-216-296-91	METAL GLAZE 0 5%	1/8W
J212	1-216-296-91	METAL GLAZE 0 5%	1/8W
J215	1-216-295-00	METAL CHIP 0 5%	1/10W
		< TRANSISTOR >	
Q101	8-729-805-45	TRANSISTOR 2SC3395	
Q201	8-729-602-21	TRANSISTOR 2SC4154	
		< RESISTOR >	
R101	1-216-097-00	METAL CHIP 100K 5%	1/10W
R102	1-216-097-00	METAL CHIP 100K 5%	1/10W
R103	1-216-091-00	METAL CHIP 56K 5%	1/10W
R104	1-216-099-00	METAL CHIP 120K 5%	1/10W
R105	1-216-069-00	METAL CHIP 6.8K 5%	1/10W
R106	1-216-061-00	METAL CHIP 3.3K 5%	1/10W
R107	1-216-114-00	METAL GLAZE 510K 5%	1/10W
R108	1-216-105-00	METAL CHIP 220K 5%	1/10W
R109	1-216-061-00	METAL CHIP 3.3K 5%	1/10W
R110	1-216-049-00	METAL CHIP 1K 5%	1/10W
R111	1-216-049-00	METAL CHIP 1K 5%	1/10W
R112	1-216-083-00	METAL CHIP 27K 5%	1/10W
R113	1-216-071-00	METAL CHIP 8.2K 5%	1/10W
R114	1-216-105-00	METAL CHIP 220K 5%	1/10W
R152	1-216-073-00	METAL CHIP 10K 5%	1/10W
R153	1-216-085-00	METAL CHIP 33K 5%	1/10W

Ref. No.	Part No.	Description	Remark
R154	1-216-085-00	METAL CHIP 33K 5%	1/10W
R155	1-216-093-00	METAL CHIP 68K 5%	1/10W
R156	1-216-081-00	METAL CHIP 22K 5%	1/10W
R157	1-236-427-11	NETWORK, RES 18K	
R159	1-216-079-00	METAL CHIP 18K 5%	1/10W
R160	1-216-049-00	METAL CHIP 1K 5%	1/10W
R171	1-216-001-00	METAL CHIP 10 5%	1/10W
R172	1-216-001-00	METAL CHIP 10 5%	1/10W
R173	1-216-001-00	METAL CHIP 10 5%	1/10W
R174	1-216-001-00	METAL CHIP 10 5%	1/10W
R201	1-216-061-00	METAL CHIP 3.3K 5%	1/10W
R202	1-216-073-00	METAL CHIP 10K 5%	1/10W
R203	1-216-061-00	METAL CHIP 3.3K 5%	1/10W
R204	1-216-073-00	METAL CHIP 10K 5%	1/10W
R205	1-216-097-00	METAL CHIP 100K 5%	1/10W
R209	1-216-081-00	METAL CHIP 22K 5%	1/10W
R212	1-239-039-11	RESISTOR, NETWORK (1608)	
R214	1-239-039-11	RESISTOR, NETWORK (1608)	
R218	1-216-065-00	METAL CHIP 4.7K 5%	1/10W
R219	1-216-073-00	METAL CHIP 10K 5%	1/10W
R220	1-216-001-00	METAL CHIP 10 5%	1/10W
R222	1-236-427-11	NETWORK, RES 18K	
R223	1-216-081-00	METAL CHIP 22K 5%	1/10W
R224	1-216-081-00	METAL CHIP 22K 5%	1/10W
R225	1-216-081-00	METAL CHIP 22K 5%	1/10W
R226	1-216-081-00	METAL CHIP 22K 5%	1/10W
R230	1-216-051-00	METAL CHIP 1.2K 5%	1/10W
R231	1-216-051-00	METAL CHIP 1.2K 5%	1/10W
R232	1-216-041-00	METAL CHIP 470 5%	1/10W
R233	1-216-041-00	METAL CHIP 470 5%	1/10W
R234	1-216-051-00	METAL CHIP 1.2K 5%	1/10W
R235	1-216-051-00	METAL CHIP 1.2K 5%	1/10W
R236	1-236-413-11	NETWORK, RES 1.2K	
R301	1-236-413-11	NETWORK, RES 1.2K	
R303	1-216-055-00	METAL CHIP 1.8K 5%	1/10W
R304	1-216-055-00	METAL CHIP 1.8K 5%	1/10W
R305	1-216-097-00	METAL CHIP 100K 5%	1/10W
R306	1-216-097-00	METAL CHIP 100K 5%	1/10W
		< VARIABLE RESISTOR >	
RV101	1-241-395-11	RES, ADJ, METAL GLAZE 10K(TRACKING GAIN)	
RV102	1-241-395-11	RES, ADJ, METAL GLAZE 10K(GAIN FOCUS)	
		< SWITCH >	
SW101	1-572-085-11	SWITCH, LEAF(LIMIT)	
		< CRYSTAL >	
X201	1-567-908-11	VIBRATOR, CRYSTAL(16MHz)	

BD(A) DISPLAY

Ref. No.	Part No.	Description	Remark
X202	1-579-216-11	VIBRATOR, CERAMIC(4MHz)	
**			
*	A-4369-006-A	DISPLAY BOARD, COMPLETE(AEP)	
		***********************	
*	A-4365-998-A	DISPLAY BOARD, COMPLETE(Canadian)	
		***********************	
*	A-4369-014-A	DISPLAY BOARD, COMPLETE(G)	
		***********************	
*	A-4369-026-A	DISPLAY BOARD, COMPLETE(UK)	
		***********************	
*	A-4369-050-A	DISPLAY BOARD, COMPLETE	
		***********************	
		(E, AUS, EA, MX, MY, SP)	
*	A-4369-052-A	DISPLAY BOARD, COMPLETE(IT)	
		***********************	
*	A-4369-057-A	DISPLAY BOARD, COMPLETE(EE)	
		***********************	
*	4-932-810-11	CUSHION (FL)	
	4-963-277-11	HOLDER (FL)	
		< CAPACITOR >	
C201	1-126-177-11	ELECT 100uF 20% 10V	
C202	1-164-159-11	CERAMIC 0.1uF 50V	
C203	1-124-229-00	ELECT 33uF 20% 10V	
C205	1-126-301-11	ELECT 1uF 20% 50V	
C206	1-164-159-11	CERAMIC 0.1uF 50V	
C207	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C208	1-126-157-11	ELECT 10uF 20% 16V	
C209	1-162-205-31	CERAMIC 18PF 5% 50V	
C210	1-162-205-31	CERAMIC 18PF 5% 50V	
C211	1-126-177-11	ELECT 100uF 20% 10V	
C212	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C213	1-126-948-11	ELECT 100uF 20% 35V	
C214	1-164-159-11	CERAMIC 0.1uF 50V	
C215	1-164-159-11	CERAMIC 0.1uF 50V	
C216	1-164-159-11	CERAMIC 0.1uF 50V	
C217	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C218	1-124-584-00	ELECT 100uF 20% 10V	
C219	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C220	1-126-177-11	ELECT 100uF 20% 10V	
C221	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C222	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C223	1-164-159-11	CERAMIC 0.1uF 50V	
C230	1-162-286-31	CERAMIC 220PF 10% 50V	
C231	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C2000	1-126-177-11	ELECT 100uF 20% 10V	
C2001	1-162-286-31	CERAMIC 220PF 10% 50V	(E, AUS, EA, MX, MY, SP)
C2002	1-162-286-31	CERAMIC 220PF 10% 50V	(E, AUS, EA, MX, MY, SP)
C2003	1-162-286-31	CERAMIC 220PF 10% 50V	(E, AUS, EA, MX, MY, SP)
C2004	1-162-286-31	CERAMIC 220PF 10% 50V	(E, AUS, EA, MX, MY, SP)
C2005	1-162-286-31	CERAMIC 220PF 10% 50V	(E, AUS, EA, MX, MY, SP)
C2006	1-162-286-31	CERAMIC 220PF 10% 50V	(E, AUS, EA, MX, MY, SP)
C2007	1-162-286-31	CERAMIC 220PF 10% 50V	(E, AUS, EA, MX, MY, SP)
C2008	1-162-286-31	CERAMIC 220PF 10% 50V	(E, AUS, EA, MX, MY, SP)
C2009	1-162-286-31	CERAMIC 220PF 10% 50V	(E, AUS, EA, MX, MY, SP)
C2010	1-162-286-31	CERAMIC 220PF 10% 50V	(E, AUS, EA, MX, MY, SP)
C2011	1-162-286-31	CERAMIC 220PF 10% 50V	(E, AUS, EA, MX, MY, SP)
		< CRYSTAL >	
CF201	1-567-775-11	VIBRATOR, CERAMIC	
		< CONNECTOR >	
CN201	1-764-298-11	HOUSING, CONNECTOR(PC BOARD)16P	
CN202	1-691-644-11	SOCKET, CONNECTOR 7P	
CN203	1-691-649-11	SOCKET, CONNECTOR 17P	
* CN2001	1-565-042-11	HOUSING, CONNECTOR(PC BOARD)5P	(E, AUS, EA, MX, MY, SP)
		< DIODE >	
D201	8-719-987-63	DIODE 1N4148M	
D202	8-719-987-63	DIODE 1N4148M	
D203	8-719-987-63	DIODE 1N4148M	
D204	8-719-987-63	DIODE 1N4148M	
D205	8-719-987-63	DIODE 1N4148M	
D206	8-719-010-40	DIODE UZ-5.6BS-TP	
D207	8-719-010-40	DIODE UZ-5.6BS-TP	
D208	8-719-014-90	DIODE UZP-7.5B(EXCEPT G)	
D208	8-719-014-98	DIODE UZP-8.2B(G)	
D213	8-719-026-64	LED SML1260S(PRESET)	
D214	8-719-026-64	LED SML1260S(MAIN)	(E, AUS, EA, MX, MY, SP)
D215	8-719-026-64	LED SML1260S(SUB)	(E, AUS, EA, MX, MY, SP)
D216	8-719-026-64	LED SML1260S(PON/SURR)	
D217	8-719-026-64	LED SML1260S(DBS.HIGHT)	
D219	8-719-026-64	LED SML1260S(DBS.LOW)	
D2000	8-719-987-63	DIODE 1N4148M	
D2001	8-719-987-63	DIODE 1N4148M	
D2002	8-719-987-63	DIODE 1N4148M	
		< FILTER >	
FL201	1-517-247-11	INDICATOR TUBE, FLUORESCENT	

Ref. No.	Part No.	Description	Remark
		< IC >	
IC201	8-759-248-73	IC uPD78043GF-060-3B9	
IC202	8-759-188-67	IC X24C01P-S	
IC203	8-759-165-82	IC PST600E-T	
IC204	8-749-923-80	IC GP1U90XB	
IC205	8-759-000-48	IC MC14052BCP	
IC206	8-759-248-70	IC XR1093	
IC2000	8-759-184-40	IC LB1638	
		< COIL >	
L201	1-410-521-11	INDUCTOR 100uH	
L202	1-410-521-11	INDUCTOR 100uH	
L203	1-410-521-11	INDUCTOR 100uH	
		< TRANSISTOR >	
Q201	8-729-119-78	TRANSISTOR 2SC403SP-51(EXCEPT IT)	
Q201	8-729-620-05	TRANSISTOR 2SC2603-EF(IT)	
Q202	8-729-900-61	TRANSISTOR DTA114ES	
Q203	8-729-900-80	TRANSISTOR DTC114ES	
Q204	8-729-119-78	TRANSISTOR 2SC403SP-51(EXCEPT IT)	
Q204	8-729-620-05	TRANSISTOR 2SC2603-EF(IT)	
Q205	8-729-900-80	TRANSISTOR DTC114ES	
Q206	8-729-900-80	TRANSISTOR DTC114ES	
		< RESISTOR >	
R201	1-249-419-11	CARBON 1.5K 5% 1/4W	
R202	1-249-409-11	CARBON 220 5% 1/4W	
R204	1-249-406-11	CARBON 120 5% 1/4W	
R205	1-247-811-31	CARBON 150 5% 1/4W	
R206	1-249-408-11	CARBON 180 5% 1/4W	
R207	1-249-409-11	CARBON 220 5% 1/4W	
R208	1-249-410-11	CARBON 270 5% 1/4W	
R209	1-249-411-11	CARBON 330 5% 1/4W	
R211	1-249-419-11	CARBON 1.5K 5% 1/4W	
R212	1-247-807-31	CARBON 100 5% 1/4W	
R213	1-249-406-11	CARBON 120 5% 1/4W	
R214	1-249-406-11	CARBON 120 5% 1/4W	
R215	1-247-811-31	CARBON 150 5% 1/4W	
R216	1-249-408-11	CARBON 180 5% 1/4W	
R217	1-249-409-11	CARBON 220 5% 1/4W	
R218	1-249-410-11	CARBON 270 5% 1/4W	
R219	1-249-416-11	CARBON 820 5% 1/4W	
R222	1-249-411-11	CARBON 330 5% 1/4W	
R223	1-249-411-11	CARBON 330 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R224	1-249-411-11	CARBON 330 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R225	1-249-411-11	CARBON 330 5% 1/4W	
R226	1-249-411-11	CARBON 330 5% 1/4W	
R227	1-249-417-11	CARBON 1K 5% 1/4W	
R228	1-249-417-11	CARBON 1K 5% 1/4W	
R229	1-249-417-11	CARBON 1K 5% 1/4W	
R230	1-249-417-11	CARBON 1K 5% 1/4W	
R231	1-249-417-11	CARBON 1K 5% 1/4W	
R232	1-249-417-11	CARBON 1K 5% 1/4W	
R233	1-249-417-11	CARBON 1K 5% 1/4W	
R234	1-249-417-11	CARBON 1K 5% 1/4W	
R235	1-249-429-11	CARBON 10K 5% 1/4W	
R236	1-249-429-11	CARBON 10K 5% 1/4W	
R238	1-249-419-11	CARBON 1.5K 5% 1/4W	
R240	1-249-417-11	CARBON 1K 5% 1/4W	
R241	1-249-417-11	CARBON 1K 5% 1/4W	
R242	1-249-417-11	CARBON 1K 5% 1/4W	
R243	1-249-417-11	CARBON 1K 5% 1/4W	
R244	1-249-417-11	CARBON 1K 5% 1/4W	
R245	1-249-417-11	CARBON 1K 5% 1/4W	
R246	1-249-417-11	CARBON 1K 5% 1/4W	
R247	1-249-417-11	CARBON 1K 5% 1/4W	
R248	1-249-417-11	CARBON 1K 5% 1/4W	
R249	1-249-417-11	CARBON 1K 5% 1/4W	
R250	1-249-429-11	CARBON 10K 5% 1/4W	
R251	1-249-417-11	CARBON 1K 5% 1/4W	
R252	1-249-429-11	CARBON 10K 5% 1/4W	
R253	1-249-437-11	CARBON 47K 5% 1/4W	
R254	1-249-437-11	CARBON 47K 5% 1/4W	
R255	1-249-437-11	CARBON 47K 5% 1/4W	
R256	1-249-437-11	CARBON 47K 5% 1/4W	
R257	1-249-437-11	CARBON 47K 5% 1/4W	
R258	1-249-437-11	CARBON 47K 5% 1/4W	
R259	1-249-437-11	CARBON 47K 5% 1/4W	
R260	1-249-437-11	CARBON 47K 5% 1/4W	
R261	1-249-437-11	CARBON 47K 5% 1/4W	
R262	1-249-437-11	CARBON 47K 5% 1/4W	
R263	1-249-437-11	CARBON 47K 5% 1/4W	
R264	1-249-437-11	CARBON 47K 5% 1/4W	
R265	1-249-437-11	CARBON 47K 5% 1/4W	
R266	1-249-437-11	CARBON 47K 5% 1/4W	
R267	1-249-437-11	CARBON 47K 5% 1/4W	
R268	1-249-437-11	CARBON 47K 5% 1/4W	
R269	1-249-437-11	CARBON 47K 5% 1/4W	
R270	1-249-437-11	CARBON 47K 5% 1/4W	
R271	1-249-437-11	CARBON 47K 5% 1/4W	
R272	1-249-437-11	CARBON 47K 5% 1/4W	
R273	1-249-425-11	CARBON 4.7K 5% 1/4W	
R274	1-249-429-11	CARBON 10K 5% 1/4W	
R275	1-249-429-11	CARBON 10K 5% 1/4W	
R276	1-249-429-11	CARBON 10K 5% 1/4W	
R277	1-249-417-11	CARBON 1K 5% 1/4W	
R278	1-249-429-11	CARBON 10K 5% 1/4W	

DISPLAY ECHO

Ref. No.	Part No.	Description	Remark
R279	1-249-422-11	CARBON 2.7K 5% 1/4W	
R280	1-249-422-11	CARBON 2.7K 5% 1/4W	
R281	1-249-423-11	CARBON 3.3K 5% 1/4W	
R282	1-249-419-11	CARBON 1.5K 5% 1/4W	
R283	1-249-441-11	CARBON 100K 5% 1/4W	
R284	1-249-429-11	CARBON 10K 5% 1/4W	
R285	1-249-425-11	CARBON 4.7K 5% 1/4W	
R286	1-249-429-11	CARBON 10K 5% 1/4W	
R287	1-247-807-31	CARBON 100 5% 1/4W	
R288	1-247-807-31	CARBON 100 5% 1/4W	
R289	1-249-429-11	CARBON 10K 5% 1/4W	
R298	1-249-411-11	CARBON 330 5% 1/4W	
R2051	1-249-421-11	CARBON 2.2K 5% 1/4W	(E,AUS,EA,MX,MY,SP)
R2051	1-249-413-11	CARBON 470 5% 1/4W	(G)
R2051	1-247-844-11	CARBON 3.6K 5% 1/4W	(Canadian)
R2051	1-247-832-11	CARBON 1.1K 5% 1/4W	(IT)
R2051	1-249-426-11	CARBON 5.6K 5% 1/4W	(EE)
R2052	1-249-429-11	CARBON 10K 5% 1/4W	(G)

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV2001	1-241-876-11	RES, VAR, CARBON 50K(MIC VOLUME)	(E,AUS,EA,MX,MY,SP)
RV2002	1-241-876-11	RES, VAR, CARBON 50K(ECHO VOLUME)	(E,AUS,EA,MX,MY,SP)

< SWITCH >

Ref. No.	Part No.	Description	Remark
S201	1-572-184-11	SWITCH, KEY BOARD(SYSTEM POWER)	
S203	1-572-184-11	SWITCH, KEY BOARD(TIMER SET)	
S204	1-572-184-11	SWITCH, KEY BOARD(DAILY)	
S205	1-572-184-11	SWITCH, KEY BOARD(REC TIMER)	
S206	1-572-184-11	SWITCH, KEY BOARD(CLOCK SET)	
S207	1-572-184-11	SWITCH, KEY BOARD(MPX)	(E,AUS,EA,MX,MY,SP)
S208	1-572-184-11	SWITCH, KEY BOARD(DBFB)	
S209	1-572-184-11	SWITCH, KEY BOARD(S.SVR)	
S211	1-572-184-11	SWITCH, KEY BOARD(EFEFCT)	
S212	1-572-184-11	SWITCH, KEY BOARD(EQ PRESET)	
S213	1-572-184-11	SWITCH, KEY BOARD(MEMORY/NEXT)	
S214	1-572-184-11	SWITCH, KEY BOARD(FUNCTION)	
S215	1-572-184-11	SWITCH, KEY BOARD(TUNER/BAND)	
S216	1-572-184-11	SWITCH, KEY BOARD(PRESET/TUNING)	
S217	1-572-184-11	SWITCH, KEY BOARD(PRESET)	
S218	1-572-184-11	SWITCH, KEY BOARD(TUNER/TIMER)	

< CRYSTAL >

Ref. No.	Part No.	Description	Remark
X201	1-567-098-41	VIBRATOR, CRYSTAL(32.768MHz)	

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Ref. No.	Part No.	Description	Remark
*	A-4369-051-A	ECHO BOARD, COMPLETE(E,AUS,EA,MX,MY,SP)	

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< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C100	1-162-282-31	CERAMIC 100PF 10% 50V	(E,AUS,EA,MX,MY,SP)
C110	1-124-907-11	ELECT 10uF 20% 50V	(E,AUS,EA,MX,MY,SP)
C113	1-162-282-31	CERAMIC 100PF 10% 50V	(E,AUS,EA,MX,MY,SP)
C114	1-124-907-11	ELECT 10uF 20% 50V	(E,AUS,EA,MX,MY,SP)
C116	1-124-903-11	ELECT 1uF 20% 50V	(E,AUS,EA,MX,MY,SP)
C117	1-130-484-00	MYLAR 0.012uF 5% 50V	(E,AUS,EA,MX,MY,SP)
C118	1-124-903-11	ELECT 1uF 20% 50V	(E,AUS,EA,MX,MY,SP)
C119	1-161-494-00	CERAMIC 0.022uF 25V	(E,AUS,EA,MX,MY,SP)
C120	1-102-118-00	CERAMIC 0.0012uF 10% 50V	(E,AUS,EA,MX,MY,SP)
C121	1-136-163-00	FILM 0.068uF 5% 50V	(E,AUS,EA,MX,MY,SP)
C122	1-124-910-11	ELECT 47uF 20% 50V	(E,AUS,EA,MX,MY,SP)
C123	1-164-159-11	CERAMIC 0.1uF 50V	(E,AUS,EA,MX,MY,SP)
C124	1-164-159-11	CERAMIC 0.1uF 50V	(E,AUS,EA,MX,MY,SP)
C125	1-136-163-00	FILM 0.068uF 5% 50V	(E,AUS,EA,MX,MY,SP)
C126	1-102-118-00	CERAMIC 0.0012uF 10% 50V	(E,AUS,EA,MX,MY,SP)
C127	1-124-903-11	ELECT 1uF 20% 50V	(E,AUS,EA,MX,MY,SP)
C128	1-130-484-00	MYLAR 0.012uF 5% 50V	(E,AUS,EA,MX,MY,SP)
C129	1-161-494-00	CERAMIC 0.022uF 25V	(E,AUS,EA,MX,MY,SP)
C130	1-126-101-11	ELECT 100uF 20% 16V	(E,AUS,EA,MX,MY,SP)
C131	1-164-159-11	CERAMIC 0.1uF 50V	(E,AUS,EA,MX,MY,SP)
C132	1-124-907-11	ELECT 10uF 20% 50V	(E,AUS,EA,MX,MY,SP)
C134	1-162-288-31	CERAMIC 330PF 10% 50V	(E,AUS,EA,MX,MY,SP)
C135	1-162-288-31	CERAMIC 330PF 10% 50V	(E,AUS,EA,MX,MY,SP)

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
* CN101	1-565-041-11	PIN, CONNECTOR (PC BOARD) 5P	(E, AUS, EA, MX, MY, SP)
CN102	1-695-368-31	PIN, CONNECTOR (PC BOARD) 7P	(E, AUS, EA, MX, MY, SP)
		< DIODE >	
D101	8-719-028-15	DIODE LED-SX-TP	(E, AUS, EA, MX, MY, SP)
		< IC >	
IC101	8-759-634-51	IC M5218AP	(E, AUS, EA, MX, MY, SP)
IC103	8-759-248-69	IC M65830AP	(E, AUS, EA, MX, MY, SP)
		< COIL >	
L101	1-408-104-00	INDUCTOR 1mH	(E, AUS, EA, MX, MY, SP)
		< RESISTOR >	
R106	1-247-887-00	CARBON	220K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R107	1-247-887-00	CARBON	220K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R108	1-249-432-11	CARBON	18K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R109	1-249-429-11	CARBON	10K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R110	1-249-429-11	CARBON	10K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R111	1-249-429-11	CARBON	10K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R114	1-249-417-11	CARBON	1K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R115	1-249-431-11	CARBON	15K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R116	1-249-431-11	CARBON	15K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R117	1-249-429-11	CARBON	10K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R118	1-247-866-11	CARBON	30K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R119	1-247-842-11	CARBON	3K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R120	1-249-431-11	CARBON	15K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R121	1-249-429-11	CARBON	10K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R122	1-249-431-11	CARBON	15K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R123	1-249-422-11	CARBON	2.7K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R124	1-247-903-00	CARBON	1M 5% 1/4W (E, AUS, EA, MX, MY, SP)
R125	1-247-883-00	CARBON	150K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R126	1-247-794-11	CARBON	30 5% 1/4W (E, AUS, EA, MX, MY, SP)
R149	1-249-423-11	CARBON	3.3K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R150	1-249-429-11	CARBON	10K 5% 1/4W (E, AUS, EA, MX, MY, SP)
		< CRYSTAL >	
X101	1-577-637-11	VIBRATOR, CERAMIC(500kHz)	(E, AUS, EA, MX, MY, SP)

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Ref. No.	Part No.	Description	Remark
*	1-651-085-11	JACK BOARD **********	
		< CAPACITOR >	
C102	1-162-294-31	CERAMIC	0.001uF 10% 50V (E, AUS, EA, MX, MY, SP, CA)
C103	1-162-294-31	CERAMIC	0.001uF 10% 50V (E, AUS, EA, MX, MY, SP, CA)
C104	1-162-282-31	CERAMIC	100PF 10% 50V (E, AUS, EA, MX, MY, SP, CA)
C106	1-162-215-31	CERAMIC	47PF 5% 50V (E, AUS, EA, MX, MY, SP, CA)
C107	1-126-157-11	ELECT	10uF 20% 16V (E, AUS, EA, MX, MY, SP, CA)
C108	1-126-157-11	ELECT	10uF 20% 16V (E, AUS, EA, MX, MY, SP, CA)
C109	1-124-463-00	ELECT	0.1uF 20% 50V (E, AUS, EA, MX, MY, SP, CA)
C111	1-162-294-31	CERAMIC	0.001uF 10% 50V (E, AUS, EA, MX, MY, SP, CA)
C112	1-164-159-11	CERAMIC	0.1uF 50V (E, AUS, EA, MX, MY, SP, CA)
C151	1-162-282-31	CERAMIC	100PF 10% 50V
C152	1-162-282-31	CERAMIC	100PF 10% 50V
C153	1-161-379-00	CERAMIC	0.01uF 20% 25V (G, IT)
		< CONNECTOR >	
CN151	1-568-852-11	PIN, CONNECTOR (PC BOARD) 9P	
		< IC >	
IC151	8-759-634-51	IC M5218AP	(E, AUS, EA, MX, MY, SP, CA)
		< JACK >	
J101	1-750-032-11	JACK (DIA. 3.5)(MIC JACK)	(E, AUS, EA, MX, MY, SP, CA)

JACK LOADING MAIN

Ref.No.	Part No.	Description	Remark
J151	1-750-032-11	JACK (DIA. 3.5)(HEADPHONE)	
		< RESISTOR >	
R101	1-249-429-11	CARBON 10K 5% 1/4W	(E, AUS, EA, MX, MY, SP, CA)
R102	1-249-417-11	CARBON 1K 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R102	1-249-414-11	CARBON 560 5% 1/4W	(Canadian)
R103	1-249-417-11	CARBON 1K 5% 1/4W	(E, AUS, EA, MX, MY, SP, CA)
R104	1-247-889-00	CARBON 270K 5% 1/4W	(E, AUS, EA, MX, MY, SP, CA)
R105	1-249-441-11	CARBON 100K 5% 1/4W	(E, AUS, EA, MX, MY, SP, CA)
R151	1-249-414-11	CARBON 560 5% 1/4W	
R152	1-249-414-11	CARBON 560 5% 1/4W	

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Ref.No.	Part No.	Description	Remark
*	1-650-836-11	LOADING BOARD *************	
		< CONNECTOR >	
CN291	1-580-918-11	HOUSING, CONNECTOR 5P	
		< SWITCH >	
S291	1-572-086-11	SWITCH, LEAF(LOAD OUT)	
S292	1-572-086-11	SWITCH, LEAF(LOAD IN)	

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Ref.No.	Part No.	Description	Remark
*	A-4365-991-A	MAIN BOARD, COMPLETE(Canadian) ********************	
*	A-4365-999-A	MAIN BOARD, COMPLETE(AEP) ********************	
*	A-4369-007-A	MAIN BOARD, COMPLETE(G, IT) ********************	
*	A-4369-019-A	MAIN BOARD, COMPLETE(UK) ********************	
*	A-4369-043-A	MAIN BOARD, COMPLETE(E, AUS, EA, MX, MY, SP) ********************	
*	A-4369-056-A	MAIN BOARD, COMPLETE(EE) ********************	
	4-925-530-01	PLATE, GROUND(TB2)(H650/H650M:AEP, IT)	
	7-682-548-04	SCREW +BVTT 3X8 (S)	
		< CAPACITOR >	
C1	1-162-195-31	CERAMIC 4.7PF 10% 50V	(AEP, E, AUS, EA, MX, MY, SP)
C2	1-124-907-11	ELECT 10uF 20% 50V	
C3	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C4	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C5	1-101-005-00	CERAMIC 22000PF 50V	(AEP, UK, EE)
C5	1-101-006-00	CERAMIC 0.047uF 50V	(E, AUS, EA, MX, MY, SP)
C6	1-162-280-31	CERAMIC 82PF 10% 50V	(AEP, UK, EE)
C6	1-162-195-31	CERAMIC 4.7PF 10% 50V	(E, AUS, EA, MX, MY, SP)
C7	1-136-162-00	FILM 0.056uF 5% 50V	(E, AUS, EA, MX, MY, SP)
C8	1-164-159-11	CERAMIC 0.1uF 50V	(E, AUS, EA, MX, MY, SP)
C9	1-102-120-00	CERAMIC 0.0018uF 10% 50V	(AEP, UK, EE)
C10	1-161-374-11	CERAMIC 0.0015uF 20% 50V	(AEP, UK, EE)
C11	1-164-097-11	CERAMIC 0.022uF 50V	(EXCEPT G, Canadian, IT)
C12	1-164-159-11	CERAMIC 0.1uF 50V	
C13	1-102-936-00	CERAMIC 3.0PF +-0.25PF 50V	(AEP, UK, EE)
C13	1-102-942-00	CERAMIC 5.0PF +-0.5PF 50V	(EXCEPT AEP, UK, EE)
C14	1-124-463-00	ELECT 0.1uF 20% 50V	
C15	1-164-095-11	CERAMIC 0.01uF 10% 16V	
C16	1-124-925-11	ELECT 2.2uF 20% 100V	
C17	1-164-097-11	CERAMIC 0.022uF 50V	(AEP, UK, EE)
C18	1-164-097-11	CERAMIC 0.022uF 50V	(AEP, UK, EE)
C19	1-124-902-00	ELECT 0.47uF 20% 50V	(AEP, UK, EE)
C20	1-124-477-11	ELECT 47uF 20% 25V	
C21	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C22	1-124-907-11	ELECT 10uF 20% 50V	
C23	1-164-095-11	CERAMIC 0.01uF 10% 16V	
C24	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C25	1-164-025-51	CERAMIC 18PF 5% 50V	
C26	1-164-025-51	CERAMIC 18PF 5% 50V	
C27	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C28	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C29	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C30	1-162-207-31	CERAMIC 22PF 5% 50V	
C31	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C32	1-124-907-11	ELECT 10uF 20% 50V	
C33	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C34	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C35	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C36	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C37	1-124-925-11	ELECT 2.2uF 20% 100V	
C38	1-124-903-11	ELECT 1uF 20% 50V	
C39	1-124-903-11	ELECT 1uF 20% 50V	
C40	1-161-379-00	CERAMIC 0.01uF 20% 25V	

Ref. No.	Part No.	Description	Remark
C41	1-126-962-11	ELECT 3.3uF 20% 50V	
C42	1-124-907-11	ELECT 10uF 20% 50V	
C43	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C44	1-161-377-00	CERAMIC 0.0047uF 30% 16V	
C45	1-162-294-31	CERAMIC 0.001uF 10% 50V	(EXCEPT G, TI)
C45	1-161-374-11	CERAMIC 0.0015uF 20% 50V	(G, IT)
C46	1-162-282-31	CERAMIC 100PF 10% 50V	(G, IT)
C47	1-124-903-11	ELECT 1uF 20% 50V	
C48	1-130-485-00	MYLAR 0.015uF 5% 50V	(EXCEPT Canadian)
C48	1-130-487-00	MYLAR 0.022uF 5% 50V	(Canadian)
C49	1-130-485-00	MYLAR 0.015uF 5% 50V	(EXCEPT Canadian)
C49	1-130-487-00	MYLAR 0.022uF 5% 50V	(Canadian)
C50	1-124-903-11	ELECT 1uF 20% 50V	
C51	1-124-903-11	ELECT 1uF 20% 50V	
C52	1-124-903-11	ELECT 1uF 20% 50V	
C53	1-124-903-11	ELECT 1uF 20% 50V	
C54	1-161-375-00	CERAMIC 0.0022uF 20% 50V	
C55	1-161-375-00	CERAMIC 0.0022uF 20% 50V	
C56	1-124-477-11	ELECT 47uF 20% 25V	
C57	1-126-176-11	ELECT 220uF 20% 10V	
C58	1-161-494-00	CERAMIC 0.022uF 25V	
C59	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C60	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C61	1-130-478-00	MYLAR 0.0039uF 5% 50V	
C62	1-130-478-00	MYLAR 0.0039uF 5% 50V	
C63	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C64	1-164-097-11	CERAMIC 0.022uF 50V	
C65	1-101-884-00	CERAMIC 56PF 5% 50V	
C66	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C68	1-161-379-00	CERAMIC 0.01uF 20% 25V	(G, IT)
C100	1-162-294-31	CERAMIC 0.001uF 10% 50V	(E, AUS, EA, MX, MY, SP)
C501	1-126-926-11	ELECT 1000uF 20% 10V	
C502	1-124-907-11	ELECT 10uF 20% 50V	
C503	1-124-903-11	ELECT 1uF 20% 50V	
C504	1-124-443-00	ELECT 100uF 20% 10V	
C505	1-124-903-11	ELECT 1uF 20% 50V	
C506	1-124-907-11	ELECT 10uF 20% 50V	
C507	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C601	1-162-286-31	CERAMIC 220PF 10% 50V	
C604	1-162-282-31	CERAMIC 100PF 10% 50V	(AEP, G, UK, IT, EE)
C605	1-124-927-11	ELECT 4.7uF 20% 100V	(AEP, G, UK, IT, EE)
C606	1-137-365-11	FILM 0.0015uF 5% 50V	(AEP, G, UK, IT, EE)
C607	1-137-437-11	FILM 0.0056uF 5% 50V	(AEP, G, UK, IT, EE)
C608	1-124-925-11	ELECT 2.2uF 20% 100V	
C609	1-124-477-11	ELECT 47uF 20% 25V	(AEP, G, UK, IT, EE)
C610	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C611	1-161-379-00	CERAMIC 0.01uF 20% 25V	(E, AUS, EA, MX, MY, SP)
C612	1-162-294-31	CERAMIC 0.001uF 10% 50V	(E, AUS, EA, MX, MY, SP)
C613	1-136-157-00	FILM 0.022uF 5% 50V	(E, AUS, EA, MX, MY, SP)
C614	1-162-282-31	CERAMIC 100PF 10% 50V	
C615	1-162-282-31	CERAMIC 100PF 10% 50V	
C616	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C617	1-124-927-11	ELECT 4.7uF 20% 100V	
C618	1-162-288-31	CERAMIC 330PF 10% 50V	(G, Canadian, IT)
C619	1-161-379-00	CERAMIC 0.01uF 20% 25V	(G, IT)
C620	1-162-282-31	CERAMI 100PF 10% 50V	(G, IT)
C638	1-162-282-31	CERAMIC 100PF 10% 50V	
C639	1-162-286-31	CERAMIC 220PF 10% 50V	
C646	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C647	1-124-927-11	ELECT 4.7uF 20% 100V	
C648	1-162-282-31	CERAMIC 100PF 10% 50V	
C649	1-162-282-31	CERAMIC 100PF 10% 50V	
C651	1-162-286-31	CERAMIC 220PF 10% 50V	
C654	1-162-282-31	CERAMIC 100PF 10% 50V	(AEP, G, UK, IT, EE)
C655	1-124-927-11	ELECT 4.7uF 20% 100V	(AEP, G, UK, IT, EE)
C656	1-137-365-11	FILM 0.0015uF 5% 50V	(AEP, G, UK, IT, EE)
C657	1-137-437-11	FILM 0.0056uF 5% 50V	(AEP, G, UK, IT, EE)
C658	1-124-925-11	ELECT 2.2uF 20% 100V	
C659	1-124-477-11	ELECT 47uF 20% 25V	(AEP, G, UK, IT, EE)
C660	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C661	1-161-379-00	CERAMIC 0.01uF 20% 25V	(E, AUS, EA, MX, MY, SP)
C662	1-162-294-31	CERAMIC 0.001uF 10% 50V	(E, AUS, EA, MX, MY, SP)
C663	1-136-157-00	FILM 0.022uF 5% 50V	(E, AUS, EA, MX, MY, SP)
C664	1-162-282-31	CERAMIC 100PF 10% 50V	
C665	1-162-282-31	CERAMIC 100PF 10% 50V	
C666	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C667	1-124-927-11	ELECT 4.7uF 20% 100V	

MAIN

Ref. No.	Part No.	Description			Remark
C668	1-162-288-31	CERAMIC	330PF	10%	50V (G, Canadian, IT)
C669	1-161-379-00	CERAMIC	0.01uF	20%	25V (G, IT)
C670	1-162-282-31	CERAMIC	100PF	10%	50V (G, IT)
C688	1-162-282-31	CERAMIC	100PF	10%	50V
C689	1-162-286-31	CERAMIC	220PF	10%	50V
C696	1-161-379-00	CERAMIC	0.01uF	20%	25V
C697	1-124-927-11	ELECT	4.7uF	20%	100V
C698	1-162-282-31	CERAMIC	100PF	10%	50V
C699	1-162-282-31	CERAMIC	100PF	10%	50V
C701	1-161-379-00	CERAMIC	0.01uF	20%	25V
C702	1-161-379-00	CERAMIC	0.01uF	20%	25V
C704	1-124-252-00	ELECT	0.33uF	20%	50V
C705	1-124-902-00	ELECT	0.47uF	20%	50V
C706	1-136-166-00	FILM	0.12uF	5%	50V
C707	1-101-006-00	CERAMIC	0.047uF		50V
C709	1-124-902-00	ELECT	0.47uF	20%	50V
C710	1-124-464-11	ELECT	0.22uF	20%	50V
C711	1-136-162-00	FILM	0.056uF	5%	50V
C712	1-136-157-00	FILM	0.022uF	5%	50V
C713	1-162-286-31	CERAMIC	220PF	10%	50V
C714	1-162-286-31	CERAMIC	220PF	10%	50V
C715	1-137-368-11	FILM	0.0047uF	5%	50V
C716	1-137-366-11	FILM	0.0022uF	5%	50V
C717	1-137-437-11	FILM	0.0056uF	5%	50V
C718	1-137-439-91	FILM	0.012uF	5%	50V
C719	1-126-160-11	ELECT	1uF	20%	50V
C720	1-126-163-11	ELECT	4.7uF	20%	50V
C731	1-124-907-11	ELECT	10uF	20%	50V
C732	1-124-907-11	ELECT	10uF	20%	50V
C734	1-161-379-00	CERAMIC	0.01uF	20%	25V
C735	1-161-379-00	CERAMIC	0.01uF	20%	25V
C736	1-161-379-00	CERAMIC	0.01uF	20%	25V
C741	1-162-289-31	CERAMIC	390PF	10%	50V
C751	1-161-379-00	CERAMIC	0.01uF	20%	25V
C752	1-161-379-00	CERAMIC	0.01uF	20%	25V
C754	1-124-252-00	ELECT	0.33uF	20%	50V
C755	1-124-902-00	ELECT	0.47uF	20%	50V
C756	1-136-166-00	FILM	0.12uF	5%	50V
C757	1-101-006-00	CERAMIC	0.047uF		50V
C759	1-124-902-00	ELECT	0.47uF	20%	50V
C760	1-124-464-11	ELECT	0.22uF	20%	50V
C761	1-136-162-00	FILM	0.056uF	5%	50V
C762	1-136-157-00	FILM	0.022uF	5%	50V
C763	1-162-286-31	CERAMIC	220PF	10%	50V
C764	1-162-286-31	CERAMIC	220PF	10%	50V
C765	1-137-368-11	FILM	0.0047uF	5%	50V
C766	1-137-366-11	FILM	0.0022uF	5%	50V
C767	1-137-437-11	FILM	0.0056uF	5%	50V
C768	1-137-439-91	FILM	0.012uF	5%	50V
C769	1-124-903-11	ELECT	1uF	20%	50V
C770	1-126-163-11	ELECT	4.7uF	20%	50V
C777	1-164-159-11	CERAMIC	0.1uF		50V (EXCEPT Canadian)
C778	1-164-159-11	CERAMIC	0.1uF		50V
C849	1-164-159-11	CERAMIC	0.1uF		50V (G, IT)
C899	1-164-159-11	CERAMIC	0.1uF		50V (G, IT)
C1000	1-162-199-31	CERAMIC	10PF	5%	50V (G, IT)

< FILTER >

Ref. No.	Part No.	Description
CF1	1-567-389-11	FILTER, CERAMIC
CF2	1-567-389-11	FILTER, CERAMIC(G, IT)
CF3	1-567-389-11	FILTER, CERAMIC

< CONNECTOR >

Ref. No.	Part No.	Description
* CN501	1-573-085-11	CONNECTOR, FPC (NON ZIF) 19P
CN502	1-764-286-11	PIN, CONNECTOR (PC BOARD) 16P
CN503	1-695-340-21	PIN, CONNECTOR (PC BOARD) 17P
CN601	1-764-290-11	PIN, CONNECTOR (PC BOARD) 24P
CN853	1-695-659-11	CONNECTOR, FFC/FPC 11P

< TRIMMER >

Ref. No.	Part No.	Description
CT1	1-141-227-00	CAP, TRIMMER 20PF(E, AUS, EA, MX, MY, SP)
CT2	1-141-227-00	CAP, TRIMMER 20PF(E, AUS, EA, MX, MY, SP)

< DIODE >

Ref. No.	Part No.	Description
D1	8-719-976-30	DIODE KV1560N(E, AUS, EA, MX, MY, SP)
D2	8-719-987-63	DIODE 1N4148M
D501	8-719-987-63	DIODE 1N4148M(E, AUS, EA, MX, MY, SP)
D502	8-719-987-63	DIODE 1N4148M
D503	8-719-987-63	DIODE 1N4148M(E, AUS, EA, MX, MY, SP)
D504	8-719-987-63	DIODE 1N4148M(E, AUS, EA, MX, MY, SP)
D551	8-719-987-63	DIODE 1N4148M(E, AUS, EA, MX, MY, SP)
D552	8-719-987-63	DIODE 1N4148M(E, AUS, EA, MX, MY, SP)
D702	8-719-987-63	DIODE 1N4148M
D703	8-719-987-63	DIODE 1N4148M
D704	8-719-987-63	DIODE 1N4148M
D849	8-719-987-63	DIODE 1N4148M
D899	8-719-987-63	DIODE 1N4148M

< FRONT END >

Ref. No.	Part No.	Description
FE1	1-465-673-11	FRONT END (2 BAND) (H650:EXCEPT G/H650M:Canadian)
FE1	1-465-007-11	FRONT END (4 GANG)(G, IT)
FE1	1-465-396-11	FRONT END (3 GANG)(EE)
FE2	1-239-846-11	ENCAPSULATED COMPONENT(AEP, UK, EE)
FE3	1-239-261-12	ENCAPSULATED COMPONENT(AEP, UK, EE)

Ref. No.	Part No.	Description	Remark
FE3	1-239-262-11	ENCAPSULATED COMPONENT	(E, AUS, EA, MX, MY, SP)
FE3	1-239-260-11	ENCAPSULATED COMPONENT(G, IT)	
FE3	1-239-634-11	ENCAPSULATED COMPONENT, AM.R (Canadian)	
		< FILTER >	
FL1	1-236-465-11	ENCAPSULATED COMPONENT(G, IT)	
FL2	1-239-597-11	FILTER, LOW PASS	
FL3	1-239-597-11	FILTER, LOW PASS	
		< IC >	
IC1	8-759-175-87	IC LC7218-ST	
IC2	8-759-090-40	IC LA1831	
IC501	8-759-821-93	IC LA5601	
IC502	8-759-634-84	IC M50255P	
IC601	8-759-634-51	IC M5218AP	(AEP, G, UK, IT, EE)
IC602	8-759-000-48	IC MC14052BCP	
IC603	8-759-000-48	IC MC14052BCP	(H650:EXCEPT AEP, G)
IC605	8-759-145-58	IC UPC4558C	
IC606	8-759-145-58	IC UPC4558C	
IC701	8-759-603-14	IC M5229P	
IC731	8-759-081-01	IC NJU7305L	
IC751	8-759-603-14	IC M5229P	
		< IFT >	
IFT1	1-404-853-11	TRANSFORMER, IF(CERAMIC FILTER)	
		< JACK >	
J601	1-764-767-11	JACK, PIN 2P(MD/PHONO)(MD/AUX)	
J602	1-764-767-11	JACK, PIN 2P(LINE OUT)	
J801	1-764-767-11	JACK, PIN 2P(SURROUND SPEAKER)	(E, AUS, EA, MX, MY, SP)
		< COIL >	
L1	1-408-425-00	INDUCTOR 220uH	(AEP, UK, EE)
L3	1-410-496-11	INDUCTOR 1.5mH	
* L801	1-410-858-11	INDUCTOR 0uH	(G, IT)
* L851	1-410-858-11	INDUCTOR 0uH	(G, IT)
L1001	1-410-521-11	INDUCTOR 100uH	(G, Canadian, IT)
		< TRANSISTOR >	
Q1	8-729-230-XX	TRANSISTOR 2SC2669OY-TPE4	
Q2	8-729-230-XX	TRANSISTOR 2SC2669OY-TPE4	(G, IT)
Q3	8-729-900-61	TRANSISTOR DTA114ES	
Q4	8-729-119-76	TRANSISTOR 2SA1175-HFE	(EXCEPT G, Canadian, IT)
Q5	8-729-900-80	TRANSISTOR DTC114ES	(EXCEPT G, Canadian, IT)
Q6	8-729-900-80	TRANSISTOR DTC114ES	(EXCEPT G, Canadian, IT)

Ref. No.	Part No.	Description	Remark
Q7	8-729-900-80	TRANSISTOR DTC114ES	(EXCEPT G, Canadian, IT)
Q8	8-729-119-76	TRANSISTOR 2SA1175-HFE	(EXCEPT G, Canadian, IT)
Q9	8-729-900-80	TRANSISTOR DTC114ES	(EXCEPT G, Canadian, IT)
Q10	8-729-201-83	TRANSISTOR 2SC3112	
Q11	8-729-202-67	TRANSISTOR 2SK246-GR3	
Q12	8-729-201-83	TRANSISTOR 2SC3112	(AEP, UK, EE)
Q13	8-729-202-67	TRANSISTOR 2SK246-GR3	(AEP, UK, EE)
Q14	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q15	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q501	8-729-900-89	TRANSISTOR DTC144ES	
Q503	8-729-900-63	TRANSISTOR DTA124ES	
Q599	8-729-900-63	TRANSISTOR DTA124ES	
Q638	8-729-900-80	TRANSISTOR DTC114ES(E, AUS, EA, MX, MY, SP)	
Q639	8-729-141-26	TRANSISTOR 2SC3622A-LK	
Q688	8-729-900-80	TRANSISTOR DTC114ES(E, AUS, EA, MX, MY, SP)	
Q689	8-729-141-26	TRANSISTOR 2SC3622A-LK	
Q701	8-729-141-26	TRANSISTOR 2SC3622A-LK	
Q702	8-729-202-67	TRANSISTOR 2SK246-GR3	
Q731	8-729-900-63	TRANSISTOR DTA124ES	
Q751	8-729-141-26	TRANSISTOR 2SC3622A-LK	
		< RESISTOR >	
R1	1-249-411-11	CARBON 330 5% 1/4W	
R2	1-249-411-11	CARBON 330 5% 1/4W	
R3	1-247-891-00	CARBON 330K 5% 1/4W	
R4	1-249-411-11	CARBON 330 5% 1/4W	
R5	1-247-891-00	CARBON 330K 5% 1/4W	(G, IT)
R6	1-249-411-11	CARBON 330 5% 1/4W	(G, IT)
R7	1-247-807-31	CARBON 100 5% 1/4W	
R8	1-249-433-11	CARBON 22K 5% 1/4W	(EXCEPT G, Canadian, IT)
R9	1-249-437-11	CARBON 47K 5% 1/4W	(AEP, UK, EE)
R9	1-247-903-00	CARBON 1M 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R10	1-247-903-00	CARBON 1M 5% 1/4W	(AEP, UK, EE)
R11	1-249-425-11	CARBON 4.7K 5% 1/4W	(EXCEPT G, Canadian, IT)
R12	1-249-437-11	CARBON 47K 5% 1/4W	
R13	1-249-437-11	CARBON 47K 5% 1/4W	
R16	1-249-425-11	CARBON 4.7K 5% 1/4W	(EXCEPT G, Canadian, IT)
R17	1-249-425-11	CARBON 4.7K 5% 1/4W	(EXCEPT G, Canadian, IT)
R18	1-249-429-11	CARBON 10K 5% 1/4W	(EXCEPT G, Canadian, IT)
R19	1-249-429-11	CARBON 10K 5% 1/4W	(EXCEPT G, Canadian, IT)

MAIN

Ref. No.	Part No.	Description	Remark
R20	1-249-429-11	CARBON 10K 5% 1/4W	(EXCEPT G, Canadian, IT)
R21	1-247-807-31	CARBON 100 5% 1/4W	
R22	1-249-425-11	CARBON 4.7K 5% 1/4W	
R23	1-249-425-11	CARBON 4.7K 5% 1/4W	
R24	1-249-421-11	CARBON 2.2K 5% 1/4W	
R25	1-249-425-11	CARBON 4.7K 5% 1/4W	
R26	1-249-414-11	CARBON 560 5% 1/4W	
R27	1-249-417-11	CARBON 1K 5% 1/4W	
R28	1-249-410-11	CARBON 270 5% 1/4W	
R29	1-249-423-11	CARBON 3.3K 5% 1/4W	
R30	1-249-425-11	CARBON 4.7K 5% 1/4W	(AEP, UK, EE)
R31	1-249-425-11	CARBON 4.7K 5% 1/4W	(AEP, UK, EE)
R32	1-249-421-11	CARBON 2.2K 5% 1/4W	(AEP, UK, EE)
R33	1-249-433-11	CARBON 22K 5% 1/4W	(AEP, UK, EE)
R34	1-249-414-11	CARBON 560 5% 1/4W	(AEP, UK, EE)
R35	1-249-417-11	CARBON 1K 5% 1/4W	(AEP, UK, EE)
R36	1-249-410-11	CARBON 270 5% 1/4W	(AEP, UK, EE)
R37	1-249-423-11	CARBON 3.3K 5% 1/4W	(AEP, UK, EE)
R38	1-249-401-11	CARBON 47 5% 1/4W	
R39	1-247-807-31	CARBON 100 5% 1/4W	
R40	1-249-429-11	CARBON 10K 5% 1/4W	
R41	1-249-417-11	CARBON 1K 5% 1/4W	
R42	1-249-417-11	CARBON 1K 5% 1/4W	
R43	1-249-417-11	CARBON 1K 5% 1/4W	
R44	1-249-417-11	CARBON 1K 5% 1/4W	
R45	1-249-417-11	CARBON 1K 5% 1/4W	
R46	1-249-425-11	CARBON 4.7K 5% 1/4W	
R47	1-249-417-11	CARBON 1K 5% 1/4W	
R48	1-249-399-11	CARBON 33 5% 1/4W	
R50	1-247-848-11	CARBON 5.1K 5% 1/4W	
R51	1-249-412-11	CARBON 390 5% 1/4W	
R52	1-249-429-11	CARBON 10K 5% 1/4W	
R53	1-247-842-11	CARBON 3K 5% 1/4W	
R54	1-249-429-11	CARBON 10K 5% 1/4W	
R55	1-249-429-11	CARBON 10K 5% 1/4W	
R56	1-249-441-11	CARBON 100K 5% 1/4W	
R57	1-249-430-11	CARBON 12K 5% 1/4W	(EXCEPT, G, IT)
R58	1-249-430-11	CARBON 12K 5% 1/4W	(G, IT)
R59	1-249-431-11	CARBON 15K 5% 1/4W	
R60	1-249-431-11	CARBON 15K 5% 1/4W	
R61	1-247-891-00	CARBON 330K 5% 1/4W	
R62	1-247-891-00	CARBON 330K 5% 1/4W	
R63	1-249-412-11	CARBON 390 5% 1/4W	
R64	1-249-412-11	CARBON 390 5% 1/4W	
R65	1-249-421-11	CARBON 2.2K 5% 1/4W	
R66	1-249-421-11	CARBON 2.2K 5% 1/4W	
R67	1-249-409-11	CARBON 220 5% 1/4W	
R68	1-247-807-31	CARBON 100 5% 1/4W	(H650:AEP, G/H650M)
R68	1-249-402-11	CARBON 56 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R69	1-249-425-11	CARBON 4.7K 5% 1/4W	
R70	1-249-425-11	CARBON 4.7K 5% 1/4W	
R74	1-249-429-11	CARBON 10K 5% 1/4W	
R80	1-249-429-11	CARBON 10K 5% 1/4W	(AEP, UK, EE)
R80	1-249-433-11	CARBON 22K 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R81	1-249-429-11	CARBON 10K 5% 1/4W	(AEP, UK, EE)
R81	1-249-433-11	CARBON 22K 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R99	1-249-420-11	CARBON 1.8K 5% 1/4W	(EXCEPT G, Canadian, IT)
R99	1-249-418-11	CARBON 1.2K 5% 1/4W	(G, Canadian, IT)
R501	1-249-393-11	CARBON 10 5% 1/4W	
⚠R502	1-217-637-00	FUSIBLE 1 5% 1/4W	
R503	1-249-433-11	CARBON 22K 5% 1/4W	
R505	1-249-429-11	CARBON 10K 5% 1/4W	
R506	1-249-429-11	CARBON 10K 5% 1/4W	
R507	1-249-433-11	CARBON 22K 5% 1/4W	
R508	1-249-429-11	CARBON 10K 5% 1/4W	
R511	1-249-417-11	CARBON 1K 5% 1/4W	
R512	1-249-417-11	CARBON 1K 5% 1/4W	
R601	1-249-417-11	CARBON 1K 5% 1/4W	
R603	1-249-434-11	CARBON 27K 5% 1/4W	(H650:AEP, G/H650M)
R603	1-249-430-11	CARBON 12K 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R604	1-249-438-11	CARBON 56K 5% 1/4W	
R605	1-249-415-11	CARBON 680 5% 1/4W	(AEP, G, UK, IT, EE)
R606	1-249-437-11	CARBON 47K 5% 1/4W	(AEP, G, UK, IT, EE)
R607	1-247-897-11	CARBON 560K 5% 1/4W	(AEP, G, UK, IT, EE)
R608	1-247-895-00	CARBON 470K 5% 1/4W	
R610	1-247-807-31	CARBON 100 5% 1/4W	(AEP, G, UK, IT, EE)
R611	1-249-417-11	CARBON 1K 5% 1/4W	
R613	1-249-437-11	CARBON 47K 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R614	1-249-437-11	CARBON 47K 5% 1/4W	
R615	1-249-437-11	CARBON 47K 5% 1/4W	(H650:EXCEPT AEP, G/H650M:Canadian)
R616	1-247-864-11	CARBON 24K 5% 1/4W	
R617	1-249-437-11	CARBON 47K 5% 1/4W	
R619	1-249-431-11	CARBON 15K 5% 1/4W	
R620	1-249-417-11	CARBON 1K 5% 1/4W	(G, IT)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
R631	1-249-429-11	CARBON 10K 5% 1/4W	
R632	1-249-429-11	CARBON 10K 5% 1/4W	
R633	1-249-429-11	CARBON 10K 5% 1/4W	(H650:EXCEPT AEP,G)
R634	1-249-429-11	CARBON 10K 5% 1/4W	(H650:EXCEPT AEP,G)
R635	1-249-429-11	CARBON 10K 5% 1/4W	(H650:EXCEPT AEP,G)
R638	1-249-425-11	CARBON 4.7K 5% 1/4W	
R639	1-249-425-11	CARBON 4.7K 5% 1/4W	
R645	1-247-887-00	CARBON 220K 5% 1/4W	
R647	1-249-425-11	CARBON 4.7K 5% 1/4W	
R648	1-249-429-11	CARBON 10K 5% 1/4W	
R649	1-249-429-11	CARBON 10K 5% 1/4W	
R651	1-249-417-11	CARBON 1K 5% 1/4W	
R653	1-249-434-11	CARBON 27K 5% 1/4W	(H650:AEP,G/H650M)
R653	1-249-430-11	CARBON 12K 5% 1/4W	(E,AUS,EA,MX,MY,SP)
R654	1-249-438-11	CARBON 56K 5% 1/4W	
R655	1-249-415-11	CARBON 680 5% 1/4W	(AEP,UK,IT,EE)
R656	1-249-437-11	CARBON 47K 5% 1/4W	(AEP,G,UK,IT,EE)
R657	1-247-897-11	CARBON 560K 5% 1/4W	(AEP,G,UK,IT,EE)
R658	1-247-895-00	CARBON 470K 5% 1/4W	
R660	1-247-807-31	CARBON 100 5% 1/4W	(AEP,G,UK,IT,EE)
R661	1-249-417-11	CARBON 1K 5% 1/4W	
R663	1-249-437-11	CARBON 47K 5% 1/4W	(E,AUS,EA,MX,MY,SP)
R664	1-249-437-11	CARBON 47K 5% 1/4W	
R665	1-249-437-11	CARBON 47K 5% 1/4W	(H650:EXCEPT AEP,G/H650M:Canadian)
R665	1-249-415-11	CARBON 680 5% 1/4W	(G,IT)
R666	1-247-864-11	CARBON 24K 5% 1/4W	
R667	1-249-437-11	CARBON 47K 5% 1/4W	
R669	1-249-431-11	CARBON 15K 5% 1/4W	
R670	1-249-417-11	CARBON 1K 5% 1/4W	(G,IT)
R688	1-249-425-11	CARBON 4.7K 5% 1/4W	
R689	1-249-425-11	CARBON 4.7K 5% 1/4W	
R695	1-247-887-00	CARBON 220K 5% 1/4W	
R696	1-247-887-00	CARBON 220K 5% 1/4W	(EE)
R697	1-249-425-11	CARBON 4.7K 5% 1/4W	
R698	1-249-429-11	CARBON 10K 5% 1/4W	
R699	1-249-429-11	CARBON 10K 5% 1/4W	
R701	1-249-427-11	CARBON 6.8K 5% 1/4W	
R702	1-247-854-11	CARBON 9.1K 5% 1/4W	
R704	1-247-903-00	CARBON 1M 5% 1/4W	
R705	1-247-903-00	CARBON 1M 5% 1/4W	

Ref. No.	Part No.	Description	Remark
R706	1-247-903-00	CARBON 1M 5% 1/4W	
R707	1-247-903-00	CARBON 1M 5% 1/4W	
R708	1-249-427-11	CARBON 6.8K 5% 1/4W	
R709	1-247-903-00	CARBON 1M 5% 1/4W	
R710	1-247-903-00	CARBON 1M 5% 1/4W	
R711	1-247-895-00	CARBON 470K 5% 1/4W	
R712	1-249-421-11	CARBON 2.2K 5% 1/4W	
R714	1-249-425-11	CARBON 4.7K 5% 1/4W	
R716	1-247-887-00	CARBON 220K 5% 1/4W	
R717	1-249-437-11	CARBON 47K 5% 1/4W	
R731	1-247-903-00	CARBON 1M 5% 1/4W	
R732	1-249-437-11	CARBON 47K 5% 1/4W	
R733	1-249-417-11	CARBON 1K 5% 1/4W	
R734	1-249-417-11	CARBON 1K 5% 1/4W	
R735	1-247-816-11	CARBON 240 5% 1/4W	
R736	1-249-442-11	CARBON 510 5% 1/4W	
R751	1-249-427-11	CARBON 6.8K 5% 1/4W	
R752	1-249-441-11	CARBON 100K 5% 1/4W	
R754	1-247-903-00	CARBON 1M 5% 1/4W	
R755	1-247-903-00	CARBON 1M 5% 1/4W	
R756	1-247-903-00	CARBON 1M 5% 1/4W	
R757	1-247-903-00	CARBON 1M 5% 1/4W	
R758	1-249-427-11	CARBON 6.8K 5% 1/4W	
R759	1-247-903-00	CARBON 1M 5% 1/4W	
R760	1-247-903-00	CARBON 1M 5% 1/4W	
R761	1-247-895-00	CARBON 470K 5% 1/4W	
R762	1-249-421-11	CARBON 2.2K 5% 1/4W	
R764	1-249-425-11	CARBON 4.7K 5% 1/4W	
R766	1-247-887-00	CARBON 220K 5% 1/4W	
R849	1-249-389-11	CARBON 4.7 5% 1/4W	(G,IT)
R899	1-249-389-11	CARBON 4.7 5% 1/4W	(G,IT)
R1000	1-249-395-11	CARBON 15 5% 1/4W	(E,AUS,EA,MX,MY,SP)

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV1	1-238-601-11	RES, ADJ, CARBON 22K	(FM TUND LIGHTING LEVEL)
RV701	1-223-652-11	RES, VAR, CARBON 100K/100K(MAIN VOLUME)	

< RELAY >

Ref. No.	Part No.	Description	Remark
RY801	1-515-920-11	RELAY (24V)	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S601	1-692-884-11	SWITCH, SLIDE(SPEAKER)	(AEP,G,UK,IT,EE)

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
T1	1-402-424-11	COIL (ANT,SW3)(H650:EXCEPT AEP,G)	
T2	1-402-960-11	COIL (OSC SW3)(H650:EXCEPT AEP,G)	

MAIN **MD(AX)** **MD(BX)**

Ref. No.	Part No.	Description	Remark
		< TERMINAL >	
TB1	1-537-488-11	TERMINAL BOARD (ANT)(AEP,G,UK,IT,EE)	
TB1	1-537-238-21	TERMINAL BOARD (H650:EXCEPT AEP,G/H650M:Canadian)	
		< TERMINAL >	
TM801	1-537-238-11	TERMINAL BOARD(SPEAKER)	
		< CRYSTAL >	
X1	1-579-585-11	VIBRATOR, CRYSTAL(7.2MHz)	
X2	1-577-075-11	OSCILLATOR, CERAMIC(456kHz)	
X3	1-579-777-11	DISCRIMINATOR, CERAMIC(10.7MHz)	

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Ref. No.	Part No.	Description	Remark
*	A-2006-623-A	MD(AX)BOARD, COMPLETE ********************	
		< CAPACITOR >	
C11	1-163-131-00	CERAMIC CHIP 390PF 5%	50V
C12	1-136-157-00	FILM 0.022uF 5%	50V
C13	1-124-234-00	ELECT 22uF 20%	16V
C18	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C21	1-163-131-00	CERAMIC CHIP 390PF 5%	50V
C22	1-136-157-00	FILM 0.022uF 5%	50V
C23	1-124-234-00	ELECT 22uF 20%	16V
C28	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C31	1-124-234-00	ELECT 22uF 20%	16V
C32	1-124-234-00	ELECT 22uF 20%	16V
C72	1-124-499-11	ELECT, NONPOLAR 1uF 20%	50V
		< JACK >	
* CNJ31	1-580-782-11	CONNECTOR, BOARD TO BOARD	
* CNJ72	1-580-411-11	SOCKET, CONNECTOR 4P	
		< CONNECTOR >	
* CNP32	1-580-772-11	PIN, CONNECTOR (PC BOARD) 4P	
* CNP71	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P	
		< IC >	
IC31A	8-759-106-02	IC UPC4570G2	
		< JUMPER RESISTOR >	
JW1	1-216-295-00	METAL CHIP 0 5%	1/10W
JW51	1-216-296-91	METAL GLAZE 0 5%	1/8W
JW52	1-216-296-91	METAL GLAZE 0 5%	1/8W
JW53	1-216-296-91	METAL GLAZE 0 5%	1/8W
JW54	1-216-296-91	METAL GLAZE 0 5%	1/8W

Ref. No.	Part No.	Description	Remark
		< TRANSISTOR >	
Q71A	8-729-216-22	TRANSISTOR 2SA1162-G	
		< RESISTOR >	
R11	1-216-099-00	METAL CHIP 120K 5%	1/10W
R12	1-216-025-00	METAL CHIP 100 5%	1/10W
R13	1-216-100-00	METAL GLAZE 130K 5%	1/10W
R14	1-216-067-00	METAL CHIP 5.6K 5%	1/10W
R21	1-216-099-00	METAL CHIP 120K 5%	1/10W
R22	1-216-025-00	METAL CHIP 100 5%	1/10W
R23	1-216-100-00	METAL GLAZE 130K 5%	1/10W
R24	1-216-067-00	METAL CHIP 5.6K 5%	1/10W
R31	1-216-033-00	METAL CHIP 220 5%	1/10W
R32	1-216-033-00	METAL CHIP 220 5%	1/10W
R71	1-216-082-00	METAL GLAZE 24K 5%	1/10W
R72	1-216-081-00	METAL CHIP 22K 5%	1/10W
R73	1-216-089-91	METAL GLAZE 47K 5%	1/10W
R74	1-216-089-91	METAL GLAZE 47K 5%	1/10W
		< VARIABLE RESISTOR >	
RV11A	1-241-761-11	RES, ADJ, CARBON 1K(PB(L)LEVEL)	
RV21A	1-241-761-11	RES, ADJ, CARBON 1K(PB(R)LEVEL)	
RV71A	1-241-630-11	RES, ADJ, CARBON 10K(NORMAL SPEED)	
RV72A	1-241-630-11	RES, ADJ, CARBON 10K(HIGHT SPEED)	

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Ref. No.	Part No.	Description	Remark
*	A-2007-134-A	MD(BX)BOARD, COMPLETE ********************	
		< CAPACITOR >	
C11	1-163-131-00	CERAMIC CHIP 390PF 5%	50V
C12	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C13	1-136-153-00	FILM 0.01uF 5%	50V
C14	1-126-177-11	ELECT 100uF 20%	10V
C15	1-124-234-00	ELECT 22uF 20%	16V
C16	1-136-273-91	FILM 75PF 5%	630V
C17	1-164-080-11	CERAMIC 390PF 10%	50V
C18	1-163-103-00	CERAMIC CHIP 27PF 5%	50V
C21	1-163-131-00	CERAMIC CHIP 390PF 5%	50V
C22	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C23	1-136-153-00	FILM 0.01uF 5%	50V
C24	1-126-177-11	ELECT 100uF 20%	10V
C25	1-124-234-00	ELECT 22uF 20%	16V
C26	1-136-273-91	FILM 75PF 5%	630V
C27	1-164-080-11	CERAMIC 390PF 10%	50V
C28	1-163-103-00	CERAMIC CHIP 27PF 5%	50V
C31	1-124-234-00	ELECT 22uF 20%	16V
C32	1-124-234-00	ELECT 22uF 20%	16V
C33	1-124-234-00	ELECT 22uF 20%	16V

Ref. No.	Part No.	Description			Remark
C51	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C52	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C53	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C54	1-136-559-11	FILM	0.0047uF	5%	630V
C56	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C57	1-164-346-11	CERAMIC CHIP	1uF		16V
C58	1-163-024-00	CERAMIC CHIP	0.018uF	10%	50V
C72	1-124-499-11	ELECT, NONPOLAR	1uF	20%	50V
		< CONNECTOR >			
* CNJ31	1-580-782-11	CONNECTOR, BOARD TO BOARD			
* CNJ33	1-580-782-11	CONNECTOR, BOARD TO BOARD			
* CNJ72	1-580-411-11	SOCKET, CONNECTOR 4P			
		< CONNECTOR >			
* CNP32	1-580-781-11	PIN, CONNECTOR (PC BOARD) 7P			
* CNP71	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P			
		< IC >			
IC32	8-759-106-02	IC	UPC4570G2		
IC31B	8-759-249-21	IC	uPC1330GR-T1		
		< JUMPER RESISTOR >			
JW1	1-216-295-00	METAL CHIP	0	5%	1/10W
JW2	1-216-295-00	METAL CHIP	0	5%	1/10W
JW11	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW12	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW13	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW14	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW15	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW16	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW17	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW18	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW19	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW20	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW21	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW22	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW23	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW24	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW25	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW26	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW27	1-216-296-91	METAL GLAZE	0	5%	1/8W
		< COIL >			
L11	1-410-780-11	INDUCTOR	27mH		
L21	1-410-780-11	INDUCTOR	27mH		

Ref. No.	Part No.	Description			Remark
		< TRANSISTOR >			
Q51	8-729-011-92	TRANSISTOR	2SC2001TP-K1K2		
Q52	8-729-011-92	TRANSISTOR	2SC2001TP-K1K2		
Q53	8-729-111-29	TRANSISTOR	2SD1616A-K		
Q71B	8-729-216-22	TRANSISTOR	2SA1162-G		
		< RESISTOR >			
R11	1-216-099-00	METAL CHIP	120K	5%	1/10W
R12	1-216-033-00	METAL CHIP	220	5%	1/10W
R13	1-216-081-00	METAL CHIP	22K	5%	1/10W
R14	1-216-075-00	METAL CHIP	12K	5%	1/10W
R15	1-216-107-00	METAL CHIP	270K	5%	1/10W
R16	1-249-430-11	CARBON	12K	5%	1/4W
R21	1-216-099-00	METAL CHIP	120K	5%	1/10W
R22	1-216-033-00	METAL CHIP	220	5%	1/10W
R23	1-216-081-00	METAL CHIP	22K	5%	1/10W
R24	1-216-075-00	METAL CHIP	12K	5%	1/10W
R25	1-216-107-00	METAL CHIP	270K	5%	1/10W
R26	1-249-430-11	CARBON	12K	5%	1/4W
R31	1-216-033-00	METAL CHIP	220	5%	1/10W
R32	1-216-033-00	METAL CHIP	220	5%	1/10W
R33	1-216-073-00	METAL CHIP	10K	5%	1/10W
R41	1-249-393-11	CARBON	10	5%	1/4W
R42	1-249-393-11	CARBON	10	5%	1/4W
R51	1-216-075-00	METAL CHIP	12K	5%	1/10W
R52	1-216-075-00	METAL CHIP	12K	5%	1/10W
R53	1-216-073-00	METAL CHIP	10K	5%	1/10W
R54	1-216-309-00	METAL CHIP	5.6	5%	1/10W
R55	1-216-309-00	METAL CHIP	5.6	5%	1/10W
R56	1-216-298-00	METAL CHIP	2.2	5%	1/10W
R71	1-216-082-00	METAL GLAZE	24K	5%	1/10W
R72	1-216-081-00	METAL CHIP	22K	5%	1/10W
R73	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R74	1-216-089-91	METAL GLAZE	47K	5%	1/10W
		< VARIABLE RESISTOR >			
RV12	1-238-551-11	RES, ADJ, CARBON 220K(REC BIAS(L))			
RV22	1-238-551-11	RES, ADJ, CARBON 220K(REC BIAS(R))			
RV11B	1-241-761-11	RES, ADJ, CARBON 1K(PB(L)LEVEL)			
RV21B	1-241-761-11	RES, ADJ, CARBON 1K(PB(R)LEVEL)			
RV71B	1-241-630-11	RES, ADJ, CARBON 10K(NORMAL SPEED)			
RV72B	1-241-630-11	RES, ADJ, CARBON 10K(HIGHT SPEED)			
		< TRANSFORMER >			
T51	1-406-419-11	COIL, BIAS OSCILLATION			

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POWER

Ref. No.	Part No.	Description				Remark
*	A-4369-044-A	POWER BOARD, COMPLETE(H650:EXCEPT AEP, G)				
		*********************				
*	A-4365-992-A	POWER BOARD, COMPLETE(Canadian)				
		*********************				
*	A-4369-000-A	POWER BOARD, COMPLETE(AEP, EE)				
		*********************				
*	A-4369-008-A	POWER BOARD, COMPLETE(G, IT)				
		*********************				
*	A-4369-020-A	POWER BOARD, COMPLETE(UK)				
		*********************				
		< CAPACITOR >				
C801	1-162-217-31	CERAMIC	56PF	5%	50V	(G, IT)
C802	1-124-903-11	ELECT	1uF	20%	50V	
C803	1-162-290-31	CERAMIC	470PF	10%	50V	
C804	1-162-282-31	CERAMIC	100PF	10%	50V	(EXCEPT, G, IT)
C804	1-162-294-31	CERAMIC	0.001uF	10%	50V	(G, IT)
C805	1-124-910-11	ELECT	47uF	20%	50V	
C807	1-124-910-11	ELECT	47uF	20%	50V	
C808	1-164-159-11	CERAMIC	0.1uF		50V	
C809	1-164-159-11	CERAMIC	0.1uF		50V	
C831	1-124-917-11	ELECT	33uF	20%	63V	
C832	1-124-917-11	ELECT	33uF	20%	63V	
C833	1-136-161-00	FILM	0.047uF	5%	50V	
C834	1-162-286-31	CERAMIC	220PF	10%	50V	(G, IT)
C851	1-162-217-31	CERAMIC	56PF	5%	50V	(G, IT)
C852	1-124-903-11	ELECT	1uF	20%	50V	
C853	1-162-290-31	CERAMIC	470PF	10%	50V	
C854	1-162-282-31	CERAMIC	100PF	10%	50V	(EXCEPT, G, IT)
C854	1-162-294-31	CERAMIC	0.001uF	10%	50V	(G, IT)
C855	1-124-910-11	ELECT	47uF	20%	50V	
C857	1-124-910-11	ELECT	47uF	20%	50V	
C858	1-164-159-11	CERAMIC	0.1uF		50V	
C859	1-164-159-11	CERAMIC	0.1uF		50V	
C871	1-124-907-11	ELECT	10uF	20%	50V	
C872	1-126-176-11	ELECT	220uF	20%	10V	
C873	1-124-902-00	ELECT	0.47uF	20%	50V	
C874	1-124-916-11	ELECT	22uF	20%	63V	
C901	1-126-224-11	ELECT	4700uF	20%	42V	
C902	1-126-224-11	ELECT	4700uF	20%	42V	
C903	1-164-159-11	CERAMIC	0.1uF		50V	
C904	1-164-159-11	CERAMIC	0.1uF		50V	
C906	1-126-937-11	ELECT	4700uF	20%	16V	
C907	1-124-887-00	ELECT	3300uF	20%	16V	
C908	1-124-925-11	ELECT	2.2uF	20%	100V	
C909	1-124-925-11	ELECT	2.2uF	20%	100V	
C910	1-124-925-11	ELECT	2.2uF	20%	100V	
C911	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C912	1-124-903-11	ELECT	1uF	20%	50V	
C913	1-124-925-11	ELECT	2.2uF	20%	100V	
C914	1-126-935-11	ELECT	470uF	20%	16V	
C915	1-126-935-11	ELECT	470uF	20%	16V	
C916	1-124-907-11	ELECT	10uF	20%	50V	
C917	1-124-477-11	ELECT	47uF	20%	25V	
C918	1-124-477-11	ELECT	47uF	20%	25V	
C919	1-124-907-11	ELECT	10uF	20%	50V	
C920	1-124-903-11	ELECT	1uF	20%	50V	
C922	1-124-910-11	ELECT	47uF	20%	50V	
C923	1-124-910-11	ELECT	47uF	20%	50V	
C949	1-161-379-00	CERAMIC	0.01uF	20%	25V	
		< CONNECTOR >				
* CN801	1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P				
CN901	1-764-308-11	HOUSING, CONNECTOR(PC BOARD)8P				
CN902	1-564-510-11	PLUG, CONNECTOR 7P				
CN903	1-695-695-11	CONNECTOR, FFC/FPC 11P				
CN904	1-695-330-31	PIN, CONNECTOR (PC BOARD) 7P				
		< DIODE >				
D801	8-719-987-63	DIODE	1N4148M			
D851	8-719-987-63	DIODE	1N4148M			
D901	8-719-987-63	DIODE	1N4148M			
D902	8-719-987-63	DIODE	1N4148M			
D903	8-719-200-82	DIODE	11ES2			
D904	8-719-200-82	DIODE	11ES2			
D905	8-719-200-82	DIODE	11ES2			
D906	8-719-200-82	DIODE	11ES2			
D909	8-719-987-63	DIODE	1N4148M			
D910	8-719-010-75	DIODE	UZ-12BSC-TP			
D911	8-719-109-93	DIODE	RD6.2ESB2			
D912	8-719-013-67	DIODE	UZ-30BSD-TP			
		< IC >				
IC801	8-749-900-96	IC	STK-4142MK2(AEP, G, UK, IT, EE)			
IC801	8-749-920-09	IC	STK-4152MK2K (E, AUS, EA, MX, MY, SP, Canadian)			
IC802	8-759-111-68	IC	UPC1237HA			
IC901	8-759-602-66	IC	M5230L-A			
		< TRANSISTOR >				
Q801	8-729-140-84	TRANSISTOR	2SC1841-PAFAEA			
Q851	8-729-140-84	TRANSISTOR	2SC1841-PAFAEA			
Q871	8-729-900-63	TRANSISTOR	DTA124ES			
Q901	8-729-900-89	TRANSISTOR	DTC144ES			
Q902	8-729-141-83	TRANSISTOR	2SB1094-LK			
Q903	8-729-119-76	TRANSISTOR	2SA1175-HFE			

Ref. No.	Part No.	Description	Remark
Q904	8-729-209-15	TRANSISTOR 2SD2012	
Q905	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q906	8-729-018-60	TRANSISTOR 2SD2012-LC	
Q907	8-729-209-15	TRANSISTOR 2SD2012	
Q908	8-729-900-80	TRANSISTOR DTC114ES	
Q909	8-729-900-80	TRANSISTOR DTC114ES	
Q910	8-729-018-59	TRANSISTOR 2SB1375-LC	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R801	1-249-417-11	CARBON 1K 5% 1/4W	
R802	1-249-438-11	CARBON 56K 5% 1/4W	
R803	1-249-414-11	CARBON 560 5% 1/4W	
R804	1-249-438-11	CARBON 56K 5% 1/4W	
⚠R805	1-212-849-00	FUSIBLE 4.7 5% 1/4W	F
R806	1-249-421-11	CARBON 2.2K 5% 1/4W	
R807	1-247-756-11	CARBON 2.2K 5% 1/2W	
R808	1-249-417-11	CARBON 1K 5% 1/4W	
R809	1-249-431-11	CARBON 15K 5% 1/4W	
R810	1-249-441-11	CARBON 100K 5% 1/4W	
R811	1-217-151-00	RES, METAL PLATE 0.22 2W	
R812	1-249-393-11	CARBON 10 5% 1/4W	
R813	1-249-438-11	CARBON 56K 5% 1/4W	
⚠R831	1-212-881-11	FUSIBLE 100 5% 1/4W	F
⚠R832	1-212-881-11	FUSIBLE 100 5% 1/4W	F
R851	1-249-417-11	CARBON 1K 5% 1/4W	
R852	1-249-438-11	CARBON 56K 5% 1/4W	
R853	1-249-414-11	CARBON 560 5% 1/4W	
R854	1-249-438-11	CARBON 56K 5% 1/4W	
⚠R855	1-212-881-11	FUSIBLE 100 5% 1/4W	F
R856	1-249-421-11	CARBON 2.2K 5% 1/4W	
R857	1-247-756-11	CARBON 2.2K 5% 1/2W	
R858	1-249-417-11	CARBON 1K 5% 1/4W	
R859	1-249-431-11	CARBON 15K 5% 1/4W	
R860	1-249-441-11	CARBON 100K 5% 1/4W	
R861	1-217-151-00	RES, METAL PLATE 0.22 2W	
R862	1-249-393-11	CARBON 10 5% 1/4W	
R863	1-249-437-11	CARBON 47K 5% 1/4W	
R871	1-249-433-11	CARBON 22K 5% 1/4W	
R872	1-249-441-11	CARBON 100K 5% 1/4W	
R873	1-249-425-11	CARBON 4.7K 5% 1/4W	
R874	1-249-431-11	CARBON 15K 5% 1/4W	
R875	1-249-439-11	CARBON 68K 5% 1/4W	
R876	1-249-422-11	CARBON 2.7K 5% 1/4W	
R901	1-249-417-11	CARBON 1K 5% 1/4W	
R902	1-249-417-11	CARBON 1K 5% 1/4W	
R904	1-249-429-11	CARBON 10K 5% 1/4W	
R905	1-247-903-00	CARBON 1M 5% 1/4W	
R906	1-249-409-11	CARBON 220 5% 1/4W	
R907	1-249-409-11	CARBON 220 5% 1/4W	

Ref. No.	Part No.	Description	Remark
R908	1-247-811-31	CARBON 150 5% 1/4W	
R909	1-247-811-31	CARBON 150 5% 1/4W	
R910	1-249-431-11	CARBON 15K 5% 1/4W	
R911	1-249-431-11	CARBON 15K 5% 1/4W	
R912	1-249-429-11	CARBON 10K 5% 1/4W	
R913	1-249-423-11	CARBON 3.3K 5% 1/4W	
⚠R914	1-212-889-00	FUSIBLE 220 5% 1/4W	F
R915	1-249-420-11	CARBON 1.8K 5% 1/4W	
⚠R916	1-212-998-00	FUSIBLE 470 5% 1/2W	F
⚠R917	1-217-371-00	FUSIBLE 0.47 5% 1/4W	F
⚠R918	1-212-853-00	FUSIBLE 6.8 5% 1/4W	F
R919	1-249-413-11	CARBON 470 5% 1/4W	
R921	1-249-417-11	CARBON 1K 5% 1/4W	
⚠R922	1-212-881-11	FUSIBLE 100 5% 1/4W	F
R923	1-249-421-11	CARBON 2.2K 5% 1/4W	

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* 1-651-089-11 PS BOARD

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< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C951	1-164-159-11	CERAMIC 0.1uF 50V	
C952	1-164-159-11	CERAMIC 0.1uF 50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN951	1-764-309-11	PIN, CONNECTOR (PC BOARD) 8P	
* CN952	1-564-321-00	PIN, CONNECTOR 2P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D951	8-719-312-09	DIODE RBA-402	

< FUSE >

Ref. No.	Part No.	Description	Remark
⚠F951	1-532-215-00	FUSE(T800mA/250V)(EXCEPT Canadian)	
⚠F951	1-576-104-11	FUSE(2A/250V)(Canadian)	
⚠F952	1-532-259-00	FUSE(T1.6A/250V)(E, EA, MX, MY, SP)	

< FUSE HOLDER >

Ref. No.	Part No.	Description	Remark
* FH911	1-533-293-11	FUSE HOLDER	
* FH912	1-533-293-11	FUSE HOLDER	
* FH913	1-533-293-11	FUSE HOLDER(E, EA, MX, MY, SP)	
* FH914	1-533-293-11	FUSE HOLDER(E, EA, MX, MY, SP)	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
⚠R951	1-219-134-11	FUSIBLE 0.1 10% 1/4W	
⚠R952	1-219-134-11	FUSIBLE 0.1 10% 1/4W	
R953	1-202-725-00	SOLID 3.3M 10% 1/2W	(Canadian)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

PS SW SW-A

< SWITCH >

Ref.No.	Part No.	Description	Remark
⚠S951	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE (110-120/220-240V) (E, EA, MX, MY, SP)	

< TRANSFORMER >

Ref.No.	Part No.	Description	Remark
⚠PT951	1-423-966-11	TRANSFORMER, POWER(Canadian)	
⚠PT951	1-423-967-11	TRANSFORMER, POWER(AEP, G, IT, EE)	
⚠PT951	1-423-968-11	TRANSFORMER, POWER(AUS, UK)	
⚠PT951	1-423-969-11	TRANSFORMER, POWER(E, EA, MX, MY, SP)	

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Ref.No.	Part No.	Description	Remark
*	A-4369-047-A	SW BOARD, COMPLETE(E, AUS, EA, MX, MY, SP) ******************	
*	A-4365-995-A	SW BOARD, COMPLETE(Canadian) ******************	
*	A-4369-003-A	SW BOARD, COMPLETE(AEP, EE) ******************	
*	A-4369-011-A	SW BOARD, COMPLETE(G, IT) ******************	
*	A-4369-023-A	SW BOARD, COMPLETE(UK) ******************	

< CONNECTOR >

Ref.No.	Part No.	Description	Remark
CN3001	1-695-738-11	CONNECTOR, FFC/FPC 18P	
CN3002	1-580-482-11	SOCKET, CONNECTOR 7P	

< DIODE >

Ref.No.	Part No.	Description	Remark
D3007	8-719-032-83	LED SEL5220S-TP(REC)	
D3008	8-719-033-06	LED SEL5920A (PAUSE)	
D3009	8-719-032-83	LED SEL5220S-TP(CD SYNCRO)	
D3010	8-719-032-83	LED SEL5220S-TP(HIGHT SPEED DUBBING)	
D3011	8-719-032-87	LED SEL5420S-TP(FWD)	
D3012	8-719-032-87	LED SEL5420S-TP(REV)	

< RESISTOR >

Ref.No.	Part No.	Description	Remark
R3001	1-247-807-31	CARBON 100 5% 1/4W	
R3002	1-249-406-11	CARBON 120 5% 1/4W	
R3003	1-249-406-11	CARBON 120 5% 1/4W	
R3004	1-247-811-31	CARBON 150 5% 1/4W	
R3005	1-249-408-11	CARBON 180 5% 1/4W	
R3006	1-249-409-11	CARBON 220 5% 1/4W	
R3007	1-249-410-11	CARBON 270 5% 1/4W	
R3008	1-249-411-11	CARBON 330 5% 1/4W	
R3009	1-249-413-11	CARBON 470 5% 1/4W	
R3010	1-249-414-11	CARBON 560 5% 1/4W	
R3014	1-247-811-31	CARBON 150 5% 1/4W	
R3015	1-249-409-11	CARBON 220 5% 1/4W	
R3016	1-247-840-00	CARBON 2.4K 5% 1/4W	
R3017	1-249-416-11	CARBON 820 5% 1/4W	
R3018	1-249-418-11	CARBON 1.2K 5% 1/4W	
R3020	1-249-426-11	CARBON 5.6K 5% 1/4W	
R3022	1-249-420-11	CARBON 1.8K 5% 1/4W	
R3023	1-249-414-11	CARBON 560 5% 1/4W	
R3024	1-249-416-11	CARBON 820 5% 1/4W	
R3027	1-249-417-11	CARBON 1K 5% 1/4W	
R3028	1-249-426-11	CARBON 5.6K 5% 1/4W	
R3029	1-249-430-11	CARBON 12K 5% 1/4W	

< SWITCH >

Ref.No.	Part No.	Description	Remark
S3001	1-572-184-11	SWITCH, KEY BOARD(■STOP)	
S3002	1-572-184-11	SWITCH, KEY BOARD(OPEN/CLOSE)	
S3003	1-572-184-11	SWITCH, KEY BOARD(▶PLAY)	
S3004	1-572-184-11	SWITCH, KEY BOARD(FF)	
S3005	1-572-184-11	SWITCH, KEY BOARD(REW)	
S3006	1-572-184-11	SWITCH, KEY BOARD(EDIT)	
S3007	1-572-184-11	SWITCH, KEY BOARD(CLEAR)	
S3008	1-572-184-11	SWITCH, KEY BOARD(CHECK)	
S3009	1-572-184-11	SWITCH, KEY BOARD(TIME)	
S3010	1-572-184-11	SWITCH, KEY BOARD(REPEAT)	
S3011	1-572-184-11	SWITCH, KEY BOARD(PROGRAM)	
S3012	1-572-184-11	SWITCH, KEY BOARD(SHUFFLE)	
S3013	1-572-184-11	SWITCH, KEY BOARD(CONTINUE)	
S3015	1-572-184-11	SWITCH, KEY BOARD(■STOP)	
S3018	1-572-184-11	SWITCH, KEY BOARD(●REC)	
S3019	1-572-184-11	SWITCH, KEY BOARD(HIGHT SPEED DUBBING)	
S3020	1-572-184-11	SWITCH, KEY BOARD(CD SYNCHRO)	
S3022	1-572-184-11	SWITCH, KEY BOARD(❙❙PAUSE)	
S3023	1-572-184-11	SWITCH, KEY BOARD(●REC)	
S3024	1-572-184-11	SWITCH, KEY BOARD(FF)	
S3025	1-572-378-11	SWITCH, SLIDE(DIRECTION)	
S3026	1-572-184-11	SWITCH, KEY BOARD(FWD)	
S3027	1-572-184-11	SWITCH, KEY BOARD(REW)	
S3028	1-572-347-31	SWITCH, SLIDE(DOLBY NR)	

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Ref.No.	Part No.	Description	Remark
*	1-638-020-11	SW-A BOARD **********	

< CONNECTOR >

Ref.No.	Part No.	Description	Remark
* CNP81	1-568-850-11	SOCKET, CONNECTOR 7P	

< IC >

Ref.No.	Part No.	Description	Remark
IC81A	8-749-924-10	IC PHONT REFLECTOR NJL5165K-B(H1)	

< RESISTOR >

Ref.No.	Part No.	Description	Remark
R84	1-249-417-11	CARBON 1K 5% 1/4W	
R85	1-249-408-11	CARBON 180 5% 1/4W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description	Remark
		< SWITCH >	
S81A	1-571-958-11	SWITCH, PUSH (1 KEY)(STOP DET)	
S82A	1-571-281-21	SWITCH, LEAF (CrO2 DET)	
S86A	1-571-281-21	SWITCH, LEAF (HALF DET)	
**			
*	1-638-020-11	SW-B BOARD	
		**********	
		< CONNECTOR >	
* CNP81	1-568-850-11	SOCKET, CONNECTOR 7P	
		< IC >	
IC81B	8-749-924-10	IC PHONT REFLECTOR NJL5165K-B(H1)	
		< RESISTOR >	
R81	1-249-414-11	CARBON 560 5% 1/4W	
R82	1-247-818-91	CARBON 300 5% 1/4W	
R83	1-247-834-11	CARBON 1.3K 5% 1/4W	
R84	1-249-417-11	CARBON 1K 5% 1/4W	
R85	1-249-408-11	CARBON 180 5% 1/4W	
		< SWITCH >	
S81B	1-571-958-11	SWITCH, PUSH (1 KEY)(STOP DET)	
S82B	1-571-281-21	SWITCH, LEAF (CrO2 DET)	
S84B	1-571-281-21	SWITCH, LEAF (ERASE PROOF)(SIDE A)	
S85B	1-571-281-21	SWITCH, LEAF (ERASE PROOF)(SIDE B)	
S86B	1-571-281-21	SWITCH, LEAF (HALF DET)	
**			
*	A-4365-994-A	TC BOARD, COMPLETE(Canadian)	
		******************	
*	A-4369-002-A	TC BOARD, COMPLETE(AEP, EE)	
		******************	
*	A-4369-010-A	TC BOARD, COMPLETE(G, IT)	
		******************	
*	A-4369-022-A	TC BOARD, COMPLETE(UK)	
		******************	
*	A-4369-046-A	TC BOARD, COMPLETE(E, AUS, EA, MX, MY, SP)	
		******************	
		< CAPACITOR >	
C301	1-124-903-11	ELECT 1uF 20% 50V	
C302	1-124-443-00	ELECT 100uF 20% 10V	
C303	1-124-907-11	ELECT 10uF 20% 50V	
C304	1-124-126-00	ELECT 47uF 20% 10V	
C401	1-162-294-31	CERAMIC 0.001uF 10% 50V(G, IT)	
C402	1-162-294-31	CERAMIC 0.001uF 10% 50V(G, IT)	
C403	1-137-368-11	FILM 0.0047uF 5% 50V	
C404	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C405	1-124-903-11	ELECT 1uF 20% 50V	
C406	1-124-907-11	ELECT 10uF 20% 50V	
C407	1-136-165-00	FILM 0.1uF 5% 50V	
C408	1-124-907-11	ELECT 10uF 20% 50V	
C409	1-124-903-11	ELECT 1uF 20% 50V	
C410	1-124-902-00	ELECT 0.47uF 20% 50V	
C411	1-124-907-11	ELECT 10uF 20% 50V	
C421	1-164-159-11	CERAMIC 0.1uF 50V	
C422	1-124-584-00	ELECT 100uF 20% 10V	
C423	1-162-290-31	CERAMIC 470PF 10% 50V	
C424	1-164-159-11	CERAMIC 0.1uF 50V	
C441	1-164-159-11	CERAMIC 0.1uF 50V	
C442	1-124-584-00	ELECT 100uF 20% 10V	
C443	1-162-290-31	CERAMIC 470PF 10% 50V	
C451	1-162-294-31	CERAMIC 0.001uF 10% 50V(G, IT)	
C452	1-162-294-31	CERAMIC 0.001uF 10% 50V(G, IT)	
C453	1-137-368-11	FILM 0.0047uF 5% 50V	
C454	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C455	1-124-903-11	ELECT 1uF 20% 50V	
C456	1-124-907-11	ELECT 10uF 20% 50V	
C457	1-136-165-00	FILM 0.1uF 5% 50V	
C458	1-124-907-11	ELECT 10uF 20% 50V	
C459	1-124-903-11	ELECT 1uF 20% 50V	
C460	1-124-902-00	ELECT 0.47uF 20% 50V	
C461	1-124-907-11	ELECT 10uF 20% 50V	
C471	1-126-101-11	ELECT 100uF 20% 16V	
C472	1-126-101-11	ELECT 100uF 20% 16V	
C473	1-162-286-31	CERAMIC 220PF 10% 50V(G, IT)	
C474	1-124-907-11	ELECT 10uF 20% 50V	
C475	1-164-159-11	CERAMIC 0.1uF 50V	
C476	1-124-584-00	ELECT 100uF 20% 10V	
C477	1-124-465-00	ELECT 0.47uF 20% 50V	
C478	1-161-375-00	CERAMIC 0.0022uF 20% 50V	
C479	1-162-286-31	CERAMIC 220PF 10% 50V(G, IT)	
C480	1-161-377-00	CERAMIC 0.0047uF 30% 16V	
C481	1-162-286-31	CERAMIC 220PF 10% 50V(G, IT)	
C482	1-124-443-00	ELECT 100uF 20% 10V	
C483	1-164-159-11	CERAMIC 0.1uF 50V	
		< CONNECTOR >	
CN301	1-764-560-11	CONNECTOR, FFC/FPC 18P	
CN302	1-564-517-11	PLUG, CONNECTOR 2P	
* CN401	1-564-520-11	PLUG, CONNECTOR 5P	
CN402	1-580-783-11	CONNECTOR, BOARD TO BOARD	
CN403	1-580-783-11	CONNECTOR, BOARD TO BOARD	
CN404	1-580-783-11	CONNECTOR, BOARD TO BOARD	
CN405	1-750-739-11	CONNECTOR, FFC/FPC 7P	
CN406	1-750-739-11	CONNECTOR, FFC/FPC 7P	
CN407	1-764-302-11	HOUSING, CONNECTOR(PC BOARD)24P	

TC

Ref. No.	Part No.	Description	Remark
CN408	1-695-368-31	PIN, CONNECTOR (PC BOARD) 7P	(E, AUS, EA, MX, MY, SP)
CN409	1-691-645-11	SOCKET, CONNECTOR 9P	
		< DIODE >	
D301	8-719-200-82	DIODE 11ES2	
D302	8-719-200-82	DIODE 11ES2	
D303	8-719-987-63	DIODE 1N4148M	
D381	8-719-047-27	DIODE SEL4425GM-TP7	
D401	8-719-987-63	DIODE 1N4148M	
D402	8-719-987-63	DIODE 1N4148M	
D498	8-719-987-63	DIODE 1N4148M	
D499	8-719-987-63	DIODE 1N4148M	
		< IC >	
IC301	8-759-099-08	IC M50964-260FP	
IC302	8-759-165-82	IC PST600E-T	
IC401	8-759-098-75	IC HA12171NT	
IC402	8-759-266-35	IC TA8242K	
		< COIL >	
L401	1-410-482-31	INDUCTOR 100uH	
L402	1-410-482-31	INDUCTOR 100uH	
		< TRANSISTOR >	
Q301	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q302	8-729-900-80	TRANSISTOR DTC114ES	
Q303	8-729-900-65	TRANSISTOR DTA144ES	
Q304	8-729-900-61	TRANSISTOR DTA114ES	
Q305	8-729-900-65	TRANSISTOR DTA144ES	
Q306	8-729-900-65	TRANSISTOR DTA144ES	
Q307	8-729-900-65	TRANSISTOR DTA144ES	
Q308	8-729-900-65	TRANSISTOR DTA144ES	
Q309	8-729-900-89	TRANSISTOR DTC144ES	
Q310	8-729-900-65	TRANSISTOR DTA144ES	
Q311	8-729-900-89	TRANSISTOR DTC144ES	
Q312	8-729-900-65	TRANSISTOR DTA144ES	
Q394	8-729-900-63	TRANSISTOR DTA124ES	
Q397	8-729-900-63	TRANSISTOR DTA124ES	
Q401	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q411	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q412	8-729-116-57	TRANSISTOR 2SB1068-K	
Q413	8-729-116-57	TRANSISTOR 2SB1068-K	
Q451	8-729-119-78	TRANSISTOR 2SC403SP-51	
		< RESISTOR >	
R301	1-249-390-11	CARBON 5.6 5% 1/6W	
R302	1-249-429-11	CARBON 10K 5% 1/4W	
R303	1-249-421-11	CARBON 2.2K 5% 1/4W	
R304	1-249-421-11	CARBON 2.2K 5% 1/4W	
R305	1-249-441-11	CARBON 100K 5% 1/4W	
R306	1-249-429-11	CARBON 10K 5% 1/4W	
R307	1-249-425-11	CARBON 4.7K 5% 1/4W	
R308	1-249-425-11	CARBON 4.7K 5% 1/4W	
R309	1-249-429-11	CARBON 10K 5% 1/4W	
R310	1-249-429-11	CARBON 10K 5% 1/4W	
R311	1-247-903-00	CARBON 1M 5% 1/4W	
R312	1-247-895-00	CARBON 470K 5% 1/4W	
R313	1-247-895-00	CARBON 470K 5% 1/4W	
R314	1-249-410-11	CARBON 270 5% 1/4W	
R315	1-249-408-11	CARBON 180 5% 1/4W	
R316	1-249-410-11	CARBON 270 5% 1/4W	
R317	1-249-410-11	CARBON 270 5% 1/4W	
R320	1-249-410-11	CARBON 270 5% 1/4W	
R321	1-249-410-11	CARBON 270 5% 1/4W	
R322	1-249-429-11	CARBON 10K 5% 1/4W	
R390	1-249-417-11	CARBON 1K 5% 1/4W	
R391	1-249-417-11	CARBON 1K 5% 1/4W	
R392	1-249-417-11	CARBON 1K 5% 1/4W	
R393	1-249-417-11	CARBON 1K 5% 1/4W	
R394	1-249-417-11	CARBON 1K 5% 1/4W	
R401	1-249-430-11	CARBON 12K 5% 1/4W	
R402	1-249-431-11	CARBON 15K 5% 1/4W	
R403	1-249-427-11	CARBON 6.8K 5% 1/4W	
R404	1-249-429-11	CARBON 10K 5% 1/4W	
R411	1-249-417-11	CARBON 1K 5% 1/4W	
R412	1-249-425-11	CARBON 4.7K 5% 1/4W	
R413	1-249-425-11	CARBON 4.7K 5% 1/4W	
R414	1-249-425-11	CARBON 4.7K 5% 1/4W	
R415	1-249-437-11	CARBON 47K 5% 1/4W	
R423	1-247-807-31	CARBON 100 5% 1/4W	
R437	1-249-429-11	CARBON 10K 5% 1/4W	
R438	1-249-429-11	CARBON 10K 5% 1/4W	
R439	1-249-429-11	CARBON 10K 5% 1/4W	
R443	1-247-807-31	CARBON 100 5% 1/4W	
R451	1-249-430-11	CARBON 12K 5% 1/4W	
R452	1-249-431-11	CARBON 15K 5% 1/4W	
R453	1-249-427-11	CARBON 6.8K 5% 1/4W	
R454	1-249-429-11	CARBON 10K 5% 1/4W	
R461	1-249-417-11	CARBON 1K 5% 1/4W	
R462	1-249-425-11	CARBON 4.7K 5% 1/4W	
R463	1-249-425-11	CARBON 4.7K 5% 1/4W	
R464	1-249-425-11	CARBON 4.7K 5% 1/4W	
R465	1-249-437-11	CARBON 47K 5% 1/4W	
R471	1-215-451-00	METAL 18K 1% 1/6W	
R472	1-249-429-11	CARBON 10K 5% 1/4W	
R473	1-249-429-11	CARBON 10K 5% 1/4W	
R474	1-249-429-11	CARBON 10K 5% 1/4W	

Ref.No.	Part No.	Description	Remark
R475	1-249-425-11	CARBON 4.7K 5% 1/4W	
R476	1-249-429-11	CARBON 10K 5% 1/4W	
R477	1-249-429-11	CARBON 10K 5% 1/4W	
R478	1-249-417-11	CARBON 1K 5% 1/4W	
R479	1-247-864-11	CARBON 24K 5% 1/4W	
⚠R480	1-212-857-00	FUSIBLE 10 5% 1/4W	F
R481	1-247-885-00	CARBON 180K 5% 1/4W	
R482	1-249-432-11	CARBON 18K 5% 1/4W	
R483	1-249-429-11	CARBON 10K 5% 1/4W	
R484	1-247-852-11	CARBON 7.5K 5% 1/4W	
R485	1-247-864-11	CARBON 24K 5% 1/4W	
R486	1-249-441-11	CARBON 100K 5% 1/4W	
⚠R487	1-212-857-00	FUSIBLE 10 5% 1/4W	F
R488	1-249-429-11	CARBON 10K 5% 1/4W	
R489	1-249-415-11	CARBON 680 5% 1/4W	
R490	1-249-429-11	CARBON 10K 5% 1/4W	
R491	1-249-415-11	CARBON 680 5% 1/4W	
R492	1-249-429-11	CARBON 10K 5% 1/4W	
R493	1-249-425-11	CARBON 4.7K 5% 1/4W	
R494	1-249-434-11	CARBON 27K 5% 1/4W	
R495	1-249-429-11	CARBON 10K 5% 1/4W	
R496	1-249-434-11	CARBON 27K 5% 1/4W	
R497	1-249-425-11	CARBON 4.7K 5% 1/4W	
R498	1-249-425-11	CARBON 4.7K 5% 1/4W	(G, IT)
R499	1-249-425-11	CARBON 4.7K 5% 1/4W	(G, IT)
R500	1-249-425-11	CARBON 4.7K 5% 1/4W	(G, IT)
R501	1-249-425-11	CARBON 4.7K 5% 1/4W	(G, IT)

< VARIABLE RESISTOR >

Ref.No.	Part No.	Description	Remark
RV401	1-241-785-11	RES, ADJ, CARBON 10K(REC LEVEL L)	
RV451	1-241-785-11	RES, ADJ, CARBON 10K(REC LEVEL R)	

< CRYSTAL >

Ref.No.	Part No.	Description	Remark
X301	1-577-358-21	VIBRATOR, CERAMIC(4MHz)	

****

Ref.No.	Part No.	Description	Remark
*	1-651-088-11	TC-SW BOARD	

****

< CONNECTOR >

Ref.No.	Part No.	Description	Remark
CN3051	1-580-482-11	SOCKET, CONNECTOR 7P	

< DIODE >

Ref.No.	Part No.	Description	Remark
D3051	8-719-026-66	LED SML1460E(FWD)	
D3052	8-719-026-66	LED SML1460E(REV)	

< RESISTOR >

Ref.No.	Part No.	Description	Remark
R3051	1-249-418-11	CARBON 1.2K 5% 1/4W	
R3052	1-249-421-11	CARBON 2.2K 5% 1/4W	
R3054	1-249-421-11	CARBON 2.2K 5% 1/4W	
R3055	1-249-424-11	CARBON 3.9K 5% 1/4W	
R3056	1-249-430-11	CARBON 12K 5% 1/4W	
R3061	1-249-411-11	CARBON 330 5% 1/4W	
R3063	1-249-410-11	CARBON 270 5% 1/4W	

< SWITCH >

Ref.No.	Part No.	Description	Remark
S3051	1-572-184-11	SWITCH, KEY BOARD(STOP)	
S3052	1-572-184-11	SWITCH, KEY BOARD(REW)	
S3053	1-572-184-11	SWITCH, KEY BOARD(FF)	
S3054	1-572-184-11	SWITCH, KEY BOARD(FWD)	
S3055	1-572-184-11	SWITCH, KEY BOARD(REW)	

****

MISCELLANEOUS
****

Ref.No.	Part No.	Description	Remark
4	1-751-965-21	WIRE (FLAT TYPE) (7 CORE)	
ANT1	1-501-321-51	ANTENNA, TELESCOPIC(H650)	
⚠15	1-569-007-11	ADAPTER, CONVERSION 2P(H650:E)	
⚠15	1-569-008-11	ADAPTER, CONVERSION 2P(H650:EA, MY, SP)	
⚠16	1-575-651-11	CORD, POWER(AEP, EA, MY, SP, EE)	
⚠16	1-575-653-11	CORD, POWER(E, MX)	
⚠16	1-590-042-11	CORD, POWER (WITH CORE)(G, IT)	
⚠16	1-690-609-11	CORD, POWER(Canadian)	
⚠16	1-696-570-21	CORD, POWER(UK)	
⚠16	1-696-848-21	CORD, POWER(AUS)	
17	1-751-960-21	WIRE (FLAT TYPE) (19 CORE)	
18	1-765-142-21	WIRE (FLAT TYPE) (17 CORE)	
19	1-751-962-11	WIRE (FLAT TYPE) (11 CORE)	
22	1-501-594-21	ANTENNA (FM)(G)	
55	1-751-964-11	WIRE (FLAT TYPE) (7 CORE)	
62	1-590-241-11	WIRE, FLAT TYPE (7 CORE)	
65	1-751-961-21	WIRE (FLAT TYPE) (9 CORE)	
67	1-751-963-11	WIRE (FLAT TYPE) (18 CORE)	
68	1-751-964-11	WIRE (FLAT TYPE) (7 CORE)	
167	1-638-983-11	PC BOARD, MOTOR FLEXIBLE	
252	1-452-719-11	MAGNET ASSY	
262	1-751-806-11	WIRE (FLAT TYPE) (5 CORE)	
304	8-848-144-11	DEVICE, OPTICAL KSS-240A	
305	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
HP101	A-2003-757-A	BASE ASSY, HEAD(PLAYBACK)	
HRP101	A-2003-930-A	BASE ASSY, HEAD(PLAYBACK/RECORD)	
M101A	X-3363-501-1	MOTOR ASSY(REEL)(DECK A)	
M101B	X-3363-501-1	MOTOR ASSY(REEL)(DECK B)	
M102A	X-3365-377-1	MOTOR ASSY(CAPSTAN)(DECK A)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
M102B	X-3365-377-1	MOTOR ASSY(CAPSTAN)(DECK B)	
M901	X-4917-504-1	MOTOR ASSY(SLED)	
M902	X-4917-523-1	MOTOR ASSY(SPINDLE)	
M903	A-4604-363-A	MOTOR (L) ASSY	

***

ACCESSORIES & PACKING MATERIALS

	1-467-461-11	COMMANDER, STANDARD (RM-S755)
	2-181-754-21	COVER, BATTERY (FOR RM-S755)
*	4-965-152-01	CUSHION (FRONT)
*	4-965-153-01	CUSHION (REAR)

***

HARDWARE LIST

#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
#2	7-682-547-09	SCREW +BVTT 3X6 (S)
#3	7-682-548-04	SCREW +BVTT 3X8 (S)
#4	7-685-649-79	SCREW +BVTP 3X14 TYPE2 IT-3
#5	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S
#6	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S(H650)
#7	7-682-550-09	SCREW +BVTT 3X12 (S)
#8	7-621-770-67	SCREW +PTT 2.6X6 (S)
#9	7-627-556-08	SCREW +P 2.6X2.8
#10	7-621-775-00	SCREW +B 2.6X3
#11	7-621-255-15	SCREW +P 2X3

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Sony Corporation
Audio Group

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HCD-H650/H650M

SONY.
SERVICE MANUAL

AEP Model
E Model
Australian Model
HCD-H650

Canadian Model
AEP Model
UK Model
HCD-H650M

SUPPLEMENT-1

File this Supplement with the Service Manual.

Subject :
1. MECHANICAL ADJUSTMENTS
2. EXPLANATION OF IC TERMINALS
3. IC BLOCK DIAGRAM
4. BLOCK DIAGRAM
5. CORRECTION

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

The following caution label is located inside the unit.

CAUTION :	INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
ADVARSEL :	USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VAROI :	AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA LASERSATEILYLLE.
VARNING :	LASERSTRÅLING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD.
ADVARSEL :	USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

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Consumer A&V Products Company
Home A&V Products Div.

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SPECIFICATIONS

CD player section

System Compact disc digital audio system
Laser Semiconductor laser
Wavelength 780 – 790 nm

Tuner section

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range 87.5 -108.0 MHz (50 kHz step for except Canadian, East European model) (100kHz step for Canadian model)
FM1 : 65 - 74MHz
FM2 : 87.5 - 108MHz
(East European model)
Aerial FM lead antenna (HCD-650M)
FM telescopic aerial (HCD-650)
Aerial terminals
75 ohm unbalanced
Intermediate frequency
10.7 MHz

AM tuner section

AEP, UK, East European, German model :
Tuning range
MW: 531 - 1,602 kHz
LW: 153 - 279 kHz
Canadian model : AM: 530 -1,710 kHz (10 kHz Step)
531 - 1,710 kHz (9kHz Step)
Italian model : MW : 522- 1611kHz (9kHz step)
LW : 153- 279kHz
Australian, Mexican, E, Saudi Arabia, Malaysia, Singapore model :
MW: 531 - 1,602 kHz (9 kHz step)
530 - 1710 kHz (10 kHz step)
SW: 5.95 - 17,9MHz
Aerial AM loop aerial
External aerial terminals
Intermediate frequency
450 kHz

Cassette deck section

Recording system
4-track 2-channel stereo
Frequency response
(DOLBY NR OFF)
60 – 13,000 Hz (±3 dB), using TYPE I cassette (Sony HF-S)
60 – 14,000 Hz (±3 dB), using TYPE II cassette(Sony UX-S)
Wow and flutter
0.1% WRMS +0.3% (DIN)

Amplifier section

For UK, AEP model :
Continuous RMS power output:
35+35 watts (6 ohms at 1 kHz, DIN)
40+40 watts (6 ohms at 1 kHz, 5% THD)
Music power output:
80+80 watts (6 ohms at 1 kHz)
For Canadian model :
Continuous RMS power output:
40+40 watts (6 ohms at 1 kHz, 5%)
For Singapore, E, Saudi Arabia, Malaysia, Australian, Mexican, model :
Coutionuous RMS Power output:
40+40 watts (6 ohms at 1 kHz, 5% THD)
Peak music power output:
500 watts (4 speakers driven)

Inputs
MIX MIC (mini jack):
for Canadian, Australian, E, Saudi Arabia, Mexican, Malaysia, Singapore model :
Sensitivity 1 mV, impedance 600 ohms
MD/AUX (phono jack):
for Canadian, Australian, E, Saudi Arabia, Mexican, Malaysia, Singapore model :
Sensitivity 450 mV, impedance 47 kilohms
MD/PHONO : (Phono Position)
For UK, AEP, G, IT, EE model :
Sensitivity 5 mV
MD/PHONO : (MD Position)
for AEP, UK, German, Italian, East European model :
Sensitivity 250mV, impedance 47 kilohms

Outputs
HEADPHONES (stereo mini jack): accept headphones of 8 ohms or more.
SPEAKER: accept impedance of 6 to 16 ohms.
SURROUND SPEAKER:
for E, Australian, Saudi Arabia, Malaysia, Mexican model :
accept impedance of 8 to 16 ohms.
Singapore model :16 Ωs.

General

Destination	Power requirements	Power consumption
Canadian model	120V AC, 50Hz	120W
Australian model	220 – 240V AC, 50Hz	150W
AEP, German, Italian, East European model	220 – 230V AC, 50/60Hz	120W
UK model	240V AC, 50Hz	120W
E, Saudi Arabia, Mexican, Malaysia, Singapore model	110 – 120V/220V – 240V AC, 50/60Hz Adjustable with the Voltage Selector	150W

Dimensions Approx. 225 x 285 x 275 mm (w/h/d)
(8 7/8 x 11 1/4 x 10 7/8 inches)
incl. projecting parts and controls
Mass Approx. 6.5 kg (14 lb. 50 oz.)

Design and specifications are subject to change without notice.

Note

This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab :

record/playback head	pinch roller
erase head	rubber belts
capstan	idlers

2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

- **Torque Measurement**

Torque	Torque Meter	Meter Reading
Forward	CQ-102C	35 to 60 g•cm (0.49 – 0.82 oz•inch)
Forward Back Tension	CQ-102C	2 to 6 g•cm (0.026 – 0.082 oz•inch)
Reverse	CQ-102RC	35 to 60 g•cm (0.49 – 0.82 oz•inch)
Reverse Back Tension	CQ-102RC	2 to 6 g•cm (0.026 – 0.082 oz•inch)
FF, REV	CQ-201B	70 to 110 g•cm (0.97 oz to 1.53 oz•inch)

EXPLANATION OF IC TERMINALS

IC201 DISPLAY CONTROLLER (µPD78043GF-060-3B9)

Pin No.	Pin name	I/O	Description
1	5G	O	FL display drive.
2	6G	O	
3	7G	O	
4	8G	O	
5	9G	O	
6	10G	O	
7	11G	O	
8	VDD	–	+5v.
9	VOL+	O	Volume motor control output. "H" : Volume up
10	VOL –	O	Volume motor control output. "H" : Volume down
11	DI • PLL	I	Serial data input from tuner PLL IC. (LC7218)
12	CE • PLL	O	Chip select output to tuner PLL IC. (LC7218)
13	DO • PLL	O	Serial data output to tuner PLL IC. (LC7218)
14	CLK • PLL	O	Serial clock output to tuner PLL IC. (LC7218)
15	DI • 7522	O	Serial data output equalizer controller. (IC731, NJU7305L)
16	CLK • 7522	O	Serial clock output equalizer controller. (IC731, NJU7305L)
17	RESET	I	Reset. "L" : Reset
18	B	O	Spectrum analyzer input switching output.
19	A	O	
20	AVss	–	GND
21	BACK • UP	I	Backup mode detection input. "L" : Backup mode
22	STEREO	I	Stereo discrimination from FM/AM IF amplifier (LA1831). "L" : Stereo
23	TUNED	I	Tuning discrimination from FM/AM IF amplifier (LA1831). "L" : Tuning
24	COM2	I	Spectrum analyzer input. (63Hz, 250Hz, 1kHz)
25	COM1	I	Spectrum analyzer input. (4kHz, 10kHz)
26	KEY. IN2	I	Key input.
27	KEY. IN1	I	
28	KEY. IN0	I	
29	AVDD	–	+5V power supply.
30	AV. REF	–	+5V power supply.
31	XT1	I	Subsystem clock (32.768kHz). Connected to crystal oscillator.
32	XT2	O	
33	Vss	–	GND
34	X1	I	System clock (4.19MHz). Connected to crystal oscillator.
35	X2	O	
36	DATA	I/O	Write/read data I/O with EEPROM (X24C01P)
37	CLK	O	Serial clock output to EEPROM (X24C01P)
38	CLK	O	Serial clock output to 16-bit serial/parallel converter. (M50255P)
39	DATA	O	Serial data output to 16-bit serial/parallel converter. (M50255P)
40	D3	I/O	Dispaly data 3 input and key data 3 output with CD controller. (µ PD75116GF)

Pin No.	Pin name	I/O	Description
41	D2	I/O	Display data 2 input and key data 2 output with CD controller. (μ PD75116GF)
42	D1	I/O	Display data 1 input and key data 1 output with CD controller.(μ PD75116GF)
43	D0	I/O	Display data 0 input and key data 0 output with CD controller. (μ PD75116GF)
44	DPCLK	I	Serial clock input from CD controller. (μ PD75116GF)
45	KEYREQ	O	Key data outpu request to CD controller.. (μ PD75116GF)
46	AUBOUT	O	Audio bus output.
47	AUBIN	I	Audio bus input.
48	Vss	–	GND
49	SIRCS	O	Infrared remote commander signal input.
50	LOW	O	DBS LOW LED output.
51	HIGH	O	DBS HIGH LED output.
52	VDD	–	+5V power supply.
53	P23	O	FL display drive.
54	P22	O	
55	P21	O	
56	P20	O	
57	P19	O	
58	P18	O	
59	P17	O	
60	P16	O	
61	P15	O	
62	P14	O	
63	P13	O	
64	P12	O	
65	P11	O	
66	P10	O	
67	P9	O	
68	P8	O	
69	P7	O	
70	P6	O	
71	VLOAD	–	− 24V power supply for dirving FL display.
72	P5	O	FL display drive.
73	P4	O	
74	P3	O	
75	P2	O	
76	P1	O	
77	1G	O	
78	2G	O	
79	3G	O	
80	4G	O	

IC301 DECK CONTROLLER (M50964-260FP)

<table>
<tr><th>Pin No.</th><th>Pin name</th><th>I/O</th><th>Description</th></tr>
<tr><td>1</td><td>G</td><td></td><td>GND</td></tr>
<tr><td>2</td><td>G</td><td></td><td>GND</td></tr>
<tr><td>3</td><td>G</td><td></td><td>GND</td></tr>
<tr><td>4</td><td></td><td></td><td>Connected +5V.</td></tr>
<tr><td>5</td><td>G</td><td></td><td>GND</td></tr>
<tr><td>6</td><td>B HALF</td><td>I</td><td>Deck B record prevention claw A, B detection input. (Analog)
<table>
<tr><td>Voltage (V)</td><td>1V</td><td>1.9V</td><td>2.8V</td><td>3.9V</td><td>5V</td></tr>
<tr><td>Half</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td><td>OFF</td></tr>
<tr><td>E. PROOF A</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>E. PROOF B</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td></tr>
</table></td></tr>
<tr><td>7</td><td>KEY Y</td><td>I</td><td rowspan="2">KEY input.
<table>
<tr><td>Voltage (V)</td><td>0</td><td>0.3</td><td>0.7</td><td>1.2</td><td>1.7</td><td>2.3</td><td>2.8</td><td>3.4</td><td>4.0</td><td>4.5</td><td>5.0</td></tr>
<tr><td>KEY Y</td><td></td><td></td><td></td><td></td><td></td><td>A◀◀</td><td>A▶▶</td><td></td><td></td><td>RELAY</td><td>OFF</td></tr>
<tr><td>KEY X</td><td>A■</td><td>A▶</td><td>A◀</td><td></td><td></td><td></td><td>HIGH SPEED DUBBING</td><td></td><td>CD</td><td></td><td></td></tr>
</table></td></tr>
<tr><td>8</td><td>KEY X</td><td>I</td></tr>
<tr><td>9</td><td>AMS IN</td><td>I</td><td>AMS signal input.</td></tr>
<tr><td>10</td><td>LM $\overline{\text{ON}}$/OFF</td><td>O</td><td>Line mute output.</td></tr>
<tr><td>11</td><td>RM $\overline{\text{ON}}$/OFF</td><td>O</td><td>Mute output.</td></tr>
<tr><td>12</td><td>RELAY $\overline{\text{ON}}$/OFF</td><td>O</td><td>Control output to REC/PB select switch. (IC31)</td></tr>
<tr><td>13</td><td>$\overline{\text{REC}}$/PB</td><td>O</td><td>Dolby IC REC/PB select output.</td></tr>
<tr><td>14</td><td>EQ70</td><td>O</td><td>Playback EQ output for playing deck. (Not used) (Open)</td></tr>
<tr><td>15</td><td>SEL A/$\overline{\text{B}}$</td><td>O</td><td>Dolby IC PB input Deck A/B select output.</td></tr>
<tr><td>16</td><td>AMS A/$\overline{\text{B}}$</td><td>O</td><td>AMS AMP input Deck A/B select output. (Not used) (Open)</td></tr>
<tr><td>17</td><td>AU BUS</td><td>I</td><td>AUDIO BUS input.</td></tr>
<tr><td>18</td><td>$\overline{\text{BIAS}}$ ON/$\overline{\text{OFF}}$</td><td>O</td><td>Bias oscillation output.</td></tr>
<tr><td>19</td><td>AUB OUT</td><td>O</td><td>AUDIO BUS output.</td></tr>
<tr><td>20</td><td>A BUS</td><td>I</td><td>AUDIO BUS normal input.</td></tr>
<tr><td>21</td><td>NC</td><td>–</td><td>Not used.</td></tr>
<tr><td>22</td><td>NC</td><td>–</td><td>Not used.</td></tr>
<tr><td>23</td><td>NC</td><td>–</td><td>Not used.</td></tr>
<tr><td>24</td><td>Vss</td><td></td><td>GND</td></tr>
<tr><td>25</td><td>$\overline{\text{RESET}}$</td><td>I</td><td>Microcomputer reset input.</td></tr>
<tr><td>26</td><td>XIN</td><td>I</td><td>Clock input. (4MHz)</td></tr>
<tr><td>27</td><td>XOUT</td><td>O</td><td>Clock output. (4MHz)</td></tr>
<tr><td>28</td><td>ϕ</td><td>O</td><td>Not used. (Open)</td></tr>
<tr><td>29</td><td>Vss</td><td></td><td>GND</td></tr>
<tr><td>30</td><td>PW IN</td><td>I</td><td>POWER OFF detection input.</td></tr>
<tr><td>31</td><td>A STOP</td><td>I</td><td>Deck A STOP switch input.</td></tr>
<tr><td>32</td><td>A HLAF</td><td>I</td><td>Deck A Half switch input.</td></tr>
<tr><td>33</td><td>A SHUT</td><td>I</td><td>Deck A Reel table signal input.</td></tr>
<tr><td>34</td><td>A70U</td><td>I</td><td>Deck A TYPE switch input. (Not used) (Open)</td></tr>
<tr><td>35</td><td>B STOP</td><td>I</td><td>Deck B STOP switch input.</td></tr>
</table>

Pin No.	Pin name	I/O	Description
36	B SHUT	I	Deck B Reel table signal input.
37	B70U	I	Deck B TYPE switch input. (Not used) (Open)
38	NC	–	Not used.
39	ARM 3	O	Deck A Reel Motor control out.
40	ARM 2	O	Deck A Reel Motor control out.
41	ARM 1	O	Deck A Reel Motor control out.
42	BRM 3	O	Deck B Reel Motor control out.
43	BRM 2	O	Deck B Reel Motor control out.
44	BRM 1	O	Deck B Reel Motor control out.
45	H/L	O	Capstan motor speed select.
46	A CM	O	A Capstan motor ON/OFF.
47	B CM	O	B Capstan motor ON/OFF.
48	BS/ASCH	I	Deck A Reel table/BS signal input.
49	A•P/BSCH	I	Deck B Reel table/A•P signal input.
50	A•REV	O	Deck A RVS LED output.
51	A•FWD	O	Deck A FWD LED output.
52	A PLAY	O	Deck B RVS/FWD LED control output. (Not used) (Open)
53	DUB H	O	High Speed Dubbing LED output.
54	DUB N	O	Normal Speed Dubbing LED output. (Not used) (Open)
55	NC	–	Not used.
56	CD SYNC	O	Auto CD Synchro LED output.
57	B•REV	O	Deck B RVS LED output.
58	B•FWD	O	Deck B FWD LED output.
59	B PLAY	O	Deck B RVS/FWD LED control output. (Not used) (Open)
60	B PAUSE	O	Deck B PAUSE LED output.
61	B•REC	O	Deck B REC LED output.
62	PASS	O	PASS amplifier switch output to Dolby IC. (IC401)
63	TEST	I	Electrical adjustment test mode setting.
64	NC	–	Not used.
65	Vss		GND
66	NC	–	Not used.
67	Vss		POWER 5 ± 0.5V.
68	AVss		Analog system GND.
69	VREF	I	Analog system reference voltage input.
70	DAC		GND
71	——		GND
72	——		GND

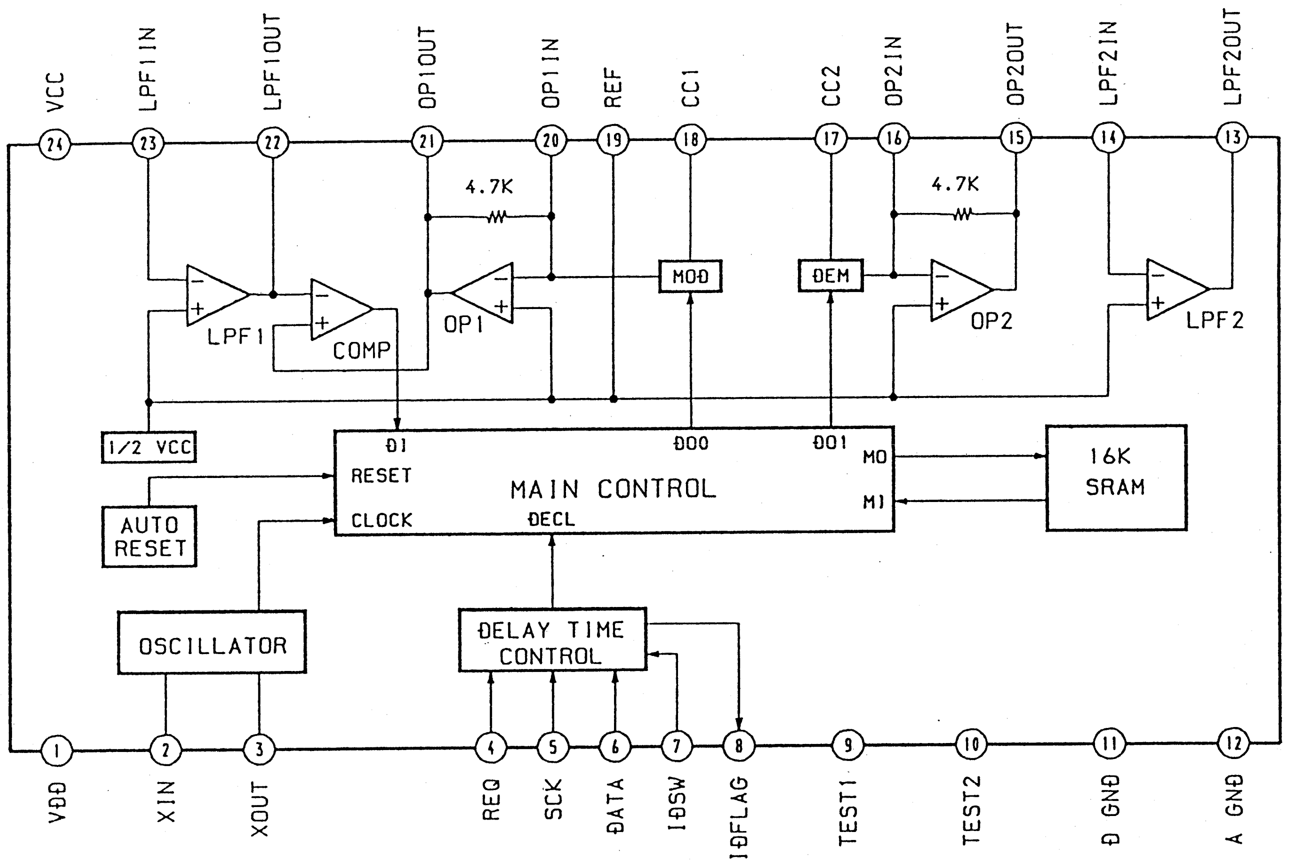
[TEST MODE]

When making pin (63) low (connect TP1 to ground with jumper wire), following function operates.

Source monitor
release the line mute while recording

● IC BLOCK DIAGRAM

IC103 M65830AP (Service Manual See page 26)


VCC
LPF1IN
LPF1OUT
OP1OUT
OP1IN
REF
CC1
CC2
OP2IN
OP2OUT
LPF2IN
LPF2OUT
4.7K
4.7K
LPF1
COMP
OP1
MOD
DEM
OP2
LPF2
1/2 VCC
AUTO RESET
D1
RESET
CLOCK
D00
D01
MAIN CONTROL
DECL
M0
M1
16K SRAM
OSCILLATOR
DELAY TIME CONTROL
VDD
XIN
XOUT
REQ
SCK
DATA
IDSW
IDFLAG
TEST1
TEST2
D GND
A GND

BLOCK DIAGRAMS (1)

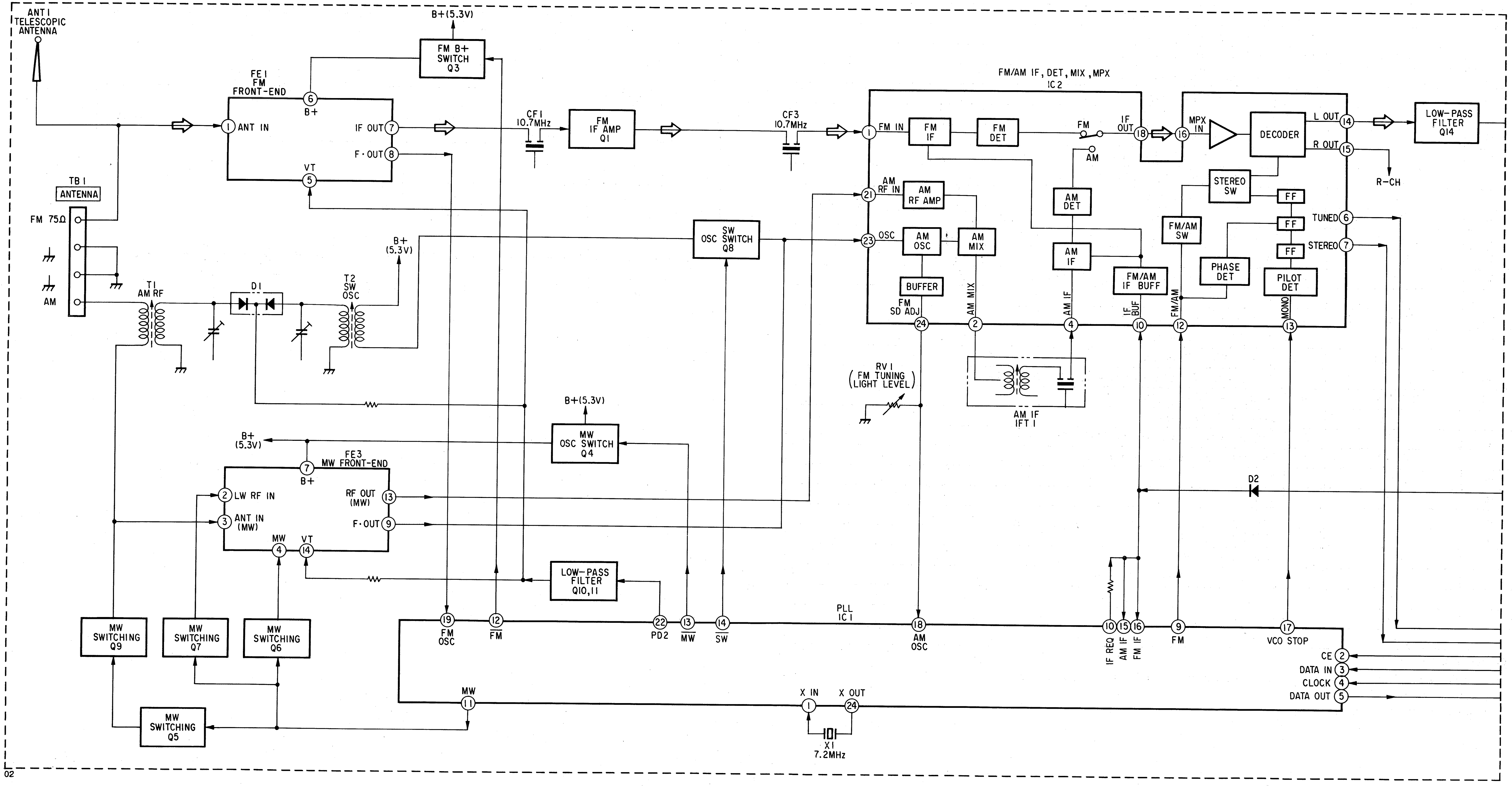
- Abbreviations

CA	: Canadian	EA	: Saudi Arabia
AUS	: Australian	EE	: East European
G	: German	MY	: Malaysia
IT	: Italian	SP	: Singapore
MX	: Mexican		

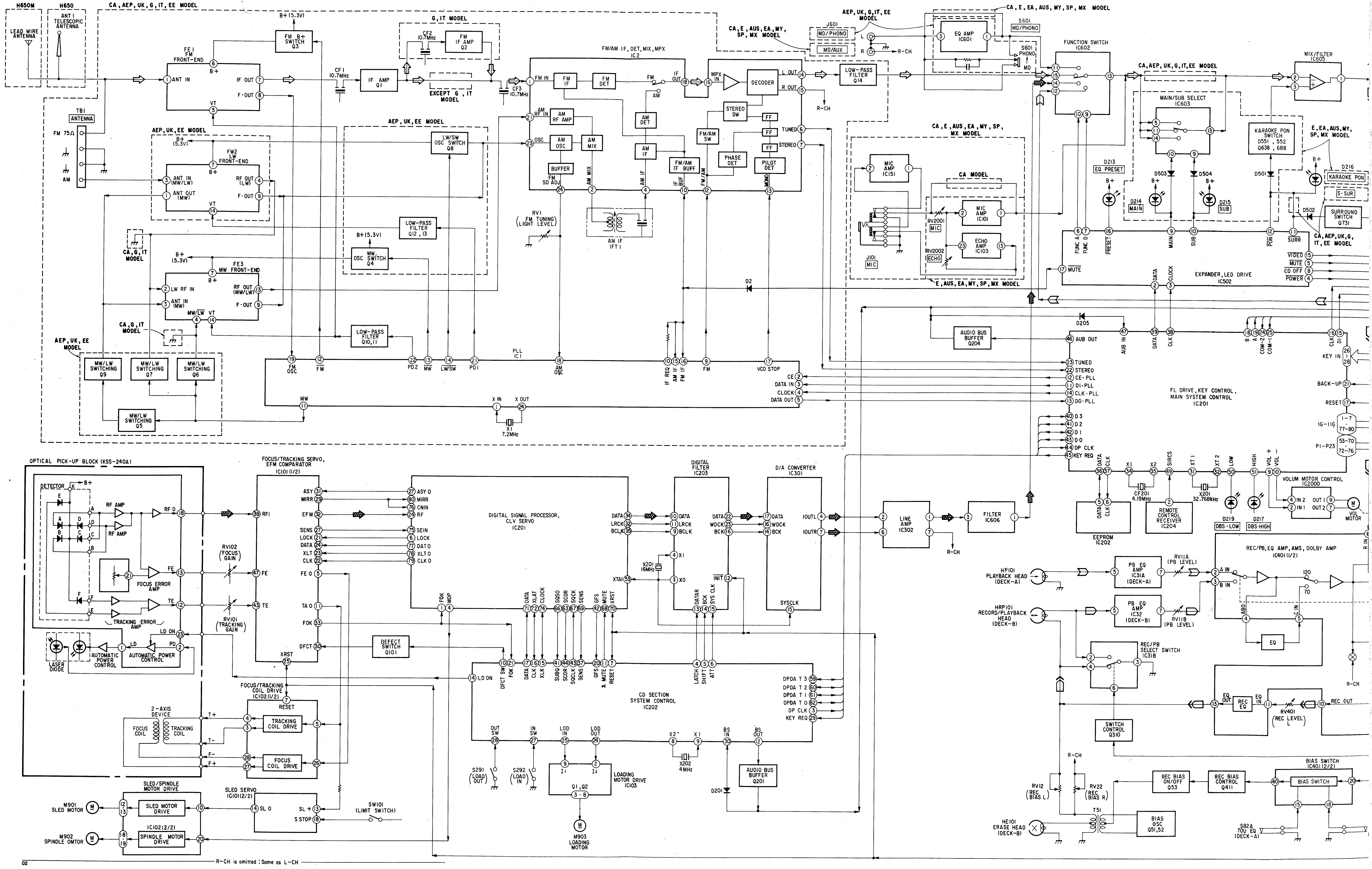
- Signal path.

⇨ : FM
⇨ : PB (DECK-A)
⇨ : PB (DECK-B)
⇨ : REC (DECK-B)
⇨ : CD

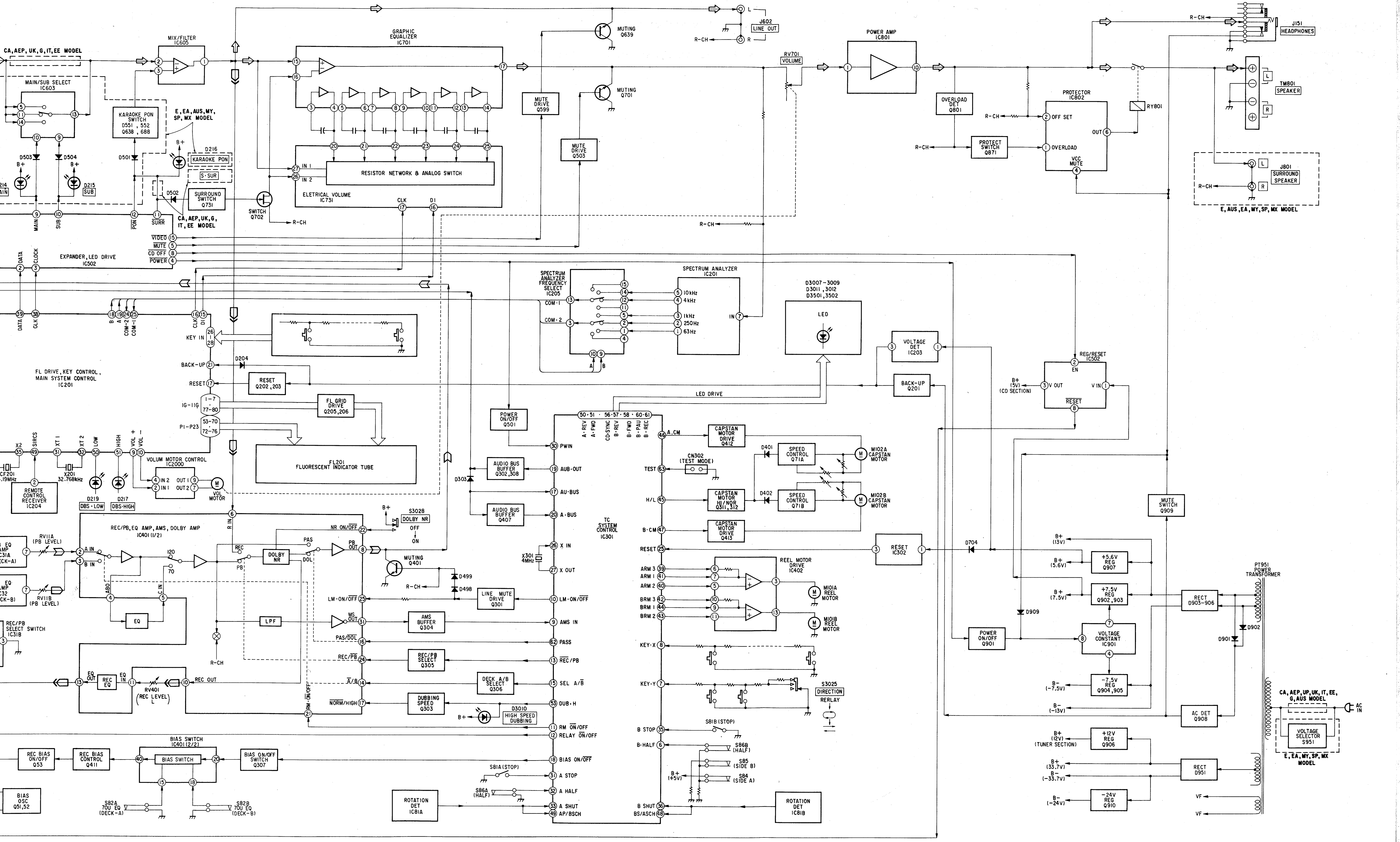
E, AUS, EA, MY, SP, MX MODEL


ANT I
TELESCOPIC
ANTENNA
TB I
ANTENNA
FM 75Ω
AM
T I
AM RF
D I
T2
SW
OSC
B+
(5.3V)
FE I
FM
FRONT-END
B+
ANT IN
IF OUT
F·OUT
VT
B+(5.3V)
FM B+
SWITCH
Q3
CF I
10.7MHz
FM
IF AMP
Q I
CF3
10.7MHz
SW
OSC SWITCH
Q8
FM/AM IF, DET, MIX, MPX
IC2
FM IN
FM
IF
FM
DET
FM
AM
IF
OUT
MPX
IN
DECODER
L OUT
R OUT
LOW-PASS
FILTER
Q14
R-CH
AM
RF IN
AM
RF AMP
OSC
AM
OSC
AM
MIX
AM
DET
AM
IF
BUFFER
FM
SD ADJ
AM MIX
AM IF
FM/AM
IF BUFF
IF BUF
FM/AM
SW
FM/AM
STEREO
SW
FF
FF
FF
PHASE
DET
PILOT
DET
MONO
TUNED
STEREO
RV I
(FM TUNING
LIGHT LEVEL)
AM IF
IFT I
B+(5.3V)
MW
OSC SWITCH
Q4
B+
(5.3V)
FE3
MW FRONT-END
B+
LW RF IN
ANT IN
(MW)
RF OUT
(MW)
F·OUT
MW
VT
LOW-PASS
FILTER
Q10, 11
D2
MW
SWITCHING
Q9
MW
SWITCHING
Q7
MW
SWITCHING
Q6
MW
SWITCHING
Q5
FM
OSC
FM
PD2
MW
SW
PLL
IC I
AM
OSC
IF REQ
AM IF
FM IF
FM
VCO STOP
CE
DATA IN
CLOCK
DATA OUT
MW
X IN
X OUT
X I
7.2MHz
02

BLOCK DIAGRAMS (2)


H650M
LEAD WIRE ANTENNA
H650
ANT1 TELESCOPIC ANTENNA
CA, AEP, UK, G, IT, EE MODEL
TB1 ANTENNA
FM 75Ω
AM
FE1 FM FRONT-END
ANT IN
IF OUT
F-OUT
VT
B+
FM B+ SWITCH Q3
B+(5.3V)
G, IT MODEL
CF2 10.7MHz
FM IF AMP Q2
CF1 10.7MHz
IF AMP Q1
EXCEPT G, IT MODEL
CF3 10.7MHz
FM/AM IF, DET, MIX, MPX IC2
FM IN
FM IF
FM DET
AM RF IN
AM RF AMP
OSC
AM OSC
AM MIX
AM DET
AM IF
BUFFER
FM SD ADJ
AM MIX
AM IF
IF BUF
FM/AM
MONO
FM/AM SW
FM/AM IF BUFF
STEREO SW
PHASE DET
PILOT DET
MPX IN
DECODER
L OUT
R OUT
TUNED
STEREO
FF
AM IF IFT1
RV1 FM TUNING (LIGHT LEVEL)
AEP, UK, EE MODEL
LW/SW OSC SWITCH Q8
FW2 LW FRONT-END
ANT IN (MW/LW)
ANT OUT (MW)
RF OUT (LW)
F-OUT
LOW-PASS FILTER Q12, 13
MW OSC SWITCH Q4
CA, G, IT MODEL
FE3 MW FRONT-END
LW RF IN
RF OUT (MW/LW)
MW/LW VT
LOW-PASS FILTER Q10, 11
AEP, UK, EE MODEL
MW/LW SWITCHING Q9
MW/LW SWITCHING Q7
MW/LW SWITCHING Q6
MW/LW SWITCHING Q5
PLL IC1
FM OSC
FM
PD2
MW
LW/SW
PD1
AM OSC
IF REQ
AM IF
FM IF
VCO STOP
CE
DATA IN
CLOCK
DATA OUT
X IN
X OUT
X1 7.2MHz
D2
R-CH
AEP, UK, G, IT, EE MODEL
CA, E, AUS, EA, MY, SP, MX MODEL
J601 MD/PHONO
MD/AUX
LOW-PASS FILTER Q14
CA, E, EA, AUS, MY, SP, MX MODEL
EQ AMP IC601
S601 MD/PHONO
S601 PHONO MD
FUNCTION SWITCH IC602
CA, AEP, UK, G, IT, EE MODEL
MIX/FILTER IC605
MAIN/SUB SELECT IC603
KARAOKE PON SWITCH D551, 552 Q638, 688
E, EA, AUS, MY, SP, MX MODEL
CA, E, AUS, EA, MY, SP, MX MODEL
MIC AMP IC151
CA MODEL
MIC AMP IC101
ECHO AMP IC103
RV2001 MIC
RV2002 ECHO
J101 MIC
E, AUS, EA, MY, SP, MX MODEL
D213 EQ PRESET
D214 MAIN
D503
D504
D215 SUB
D501
D216 KARAOKE PON
S-SUR
D502
SURROUND SWITCH Q731
CA, AEP, UK, G, IT, EE MODEL
FUNC A
FUNC D
PRESET
MAIN
SUB
PON
SURR
MUTE
VIDEO
MUTE
CD OFF
POWER
EXPANDER, LED DRIVE IC502
DATA
CLOCK
D205
AUDIO BUS BUFFER Q204
AUB OUT
AUB IN
DATA
CLK
COM-2
COM-1
CLK
DI
KEY IN
TUNED
STEREO
CE·PLL
DI·PLL
CLK·PLL
DO·PLL
FL DRIVE, KEY CONTROL, MAIN SYSTEM CONTROL IC201
BACK-UP
RESET
IG-11G
P1-P23
D3
D2
D1
D0
DP CLK
KEY REQ
DATA
CLK
X1
X2
SIRCS
XT1
XT2
LOW
HIGH
VOL+
VOL-
CF201 4.19MHz
X201 32.768kHz
EEPROM IC202
REMOTE CONTROL RECEIVER IC204
D219 DBS·LOW
D217 DBS·HIGH
VOLUM MOTOR CONTROL IC2000
VOL MOTOR
OPTICAL PICK-UP BLOCK (KSS-240A)
DETECTOR
RF AMP
RF O
FOCUS ERROR AMP
FE
TE
TRACKING ERROR AMP
LD ON
LD
PD
AUTOMATIC POWER CONTROL
LASER DIODE
RV102 (FOCUS GAIN)
RV101 (TRACKING GAIN)
FOCUS/TRACKING SERVO, EFM COMPARATOR IC101 (1/2)
ASY
MIRR
EFM
SENS
LOCK
DATA
XLT
CLK
RFI
FE O
TA O
FOK
DFCT
XRST
DEFECT SWITCH Q101
CNIN
SEIN
CLK O
DIGITAL SIGNAL PROCESSOR, CLV SERVO IC201
FOK
MDP
DATA
LRCK
BCLK
XTAI
X201 16MHz
DIGITAL FILTER IC203
WDCK
BCK
INIT
DATAR
SYS CLK
D/A CONVERTER IC301
IOUTL
IOUTR
SYSCLK
LINE AMP IC302
FILTER IC606
FOCUS/TRACKING COIL DRIVE IC102 (1/2)
RESET
TRACKING COIL DRIVE
FOCUS COIL DRIVE
2-AXIS DEVICE
FOCUS COIL
TRACKING COIL
CD SECTION SYSTEM CONTROL IC202
LD ON
DFCT SW
SUBQ
SCOR
SQCK
SENS
GFS
A MUTE
RESET
LATCH
SHIFT
ATT
DPDA T3
DPDA T2
DPDA T1
DPDA T0
DP CLK
KEY REQ
OUT SW
IN SW
LOD IN
LOD OUT
X2'
X1
BS IN
BS OUT
S291 (LOAD) OUT
S292 (LOAD) IN
Q1, Q2
LOADING MOTOR DRIVE IC103
M903 LOADING MOTOR
X202 4MHz
D201
AUDIO BUS BUFFER Q201
SLED/SPINDLE MOTOR DRIVE
SLED MOTOR DRIVE
IC102 (2/2)
SPINDLE MOTOR DRIVE
M901 SLED MOTOR
M902 SPINDLE OMTOR
SLED SERVO IC101 (2/2)
SL O
SL+
S STOP
SW101 (LIMIT SWITCH)
REC/PB, EQ AMP, AMS, DOLBY AMP IC401 (1/2)
HP101 PLAYBACK HEAD (DECK-A)
HRP101 RECORD/PLAYBACK HEAD (DECK-B)
PB EQ AMP IC31A (DECK-A)
PB EQ AMP IC32 (DECK-B)
RV11A (PB LEVEL)
RV11B (PB LEVEL)
A IN
B IN
EQ
REC/PB SELECT SWITCH IC31B
SWITCH CONTROL Q310
EQ OUT
REC EQ
EQ IN
RV401 (REC LEVEL)
REC OUT
R-CH
RV12 (REC BIAS L)
RV22 (REC BIAS R)
T51
HE101 ERASE HEAD (DECK-B)
BIAS OSC Q51, 52
REC BIAS ON/OFF Q53
REC BIAS CONTROL Q411
BIAS SWITCH IC401 (2/2)
BIAS SWITCH
S82A 70U EQ (DECK-A)
02

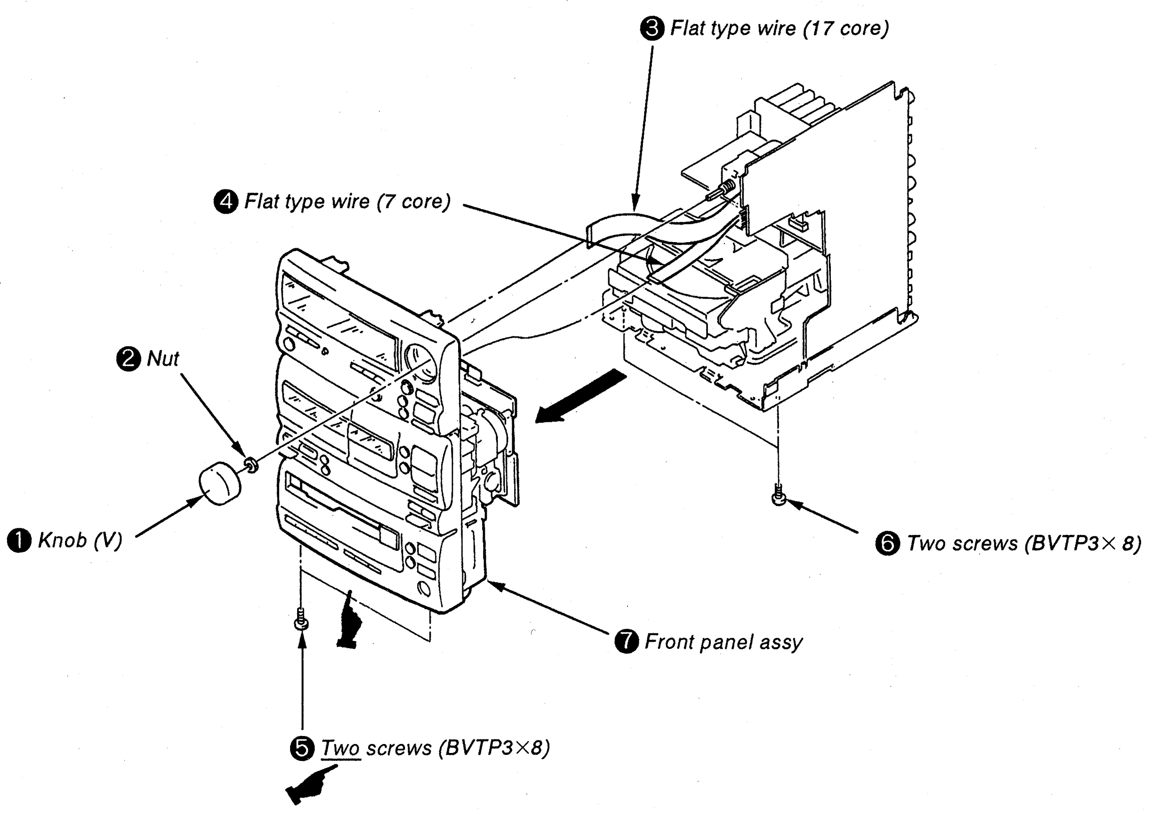
R-CH is omitted : Same as L-CH


CA, AEP, UK, G, IT, EE MODEL
MIX/FILTER IC605
MAIN/SUB SELECT IC603
KARAOKE PON SWITCH D551, 552 Q638, 688
E, EA, AUS, MY, SP, MX MODEL
D216 KARAOKE PON
S·SUR
D503
D504
D501
D502
D215 SUB
SURROUND SWITCH Q731
CA, AEP, UK, G, IT, EE MODEL
MAIN
SUB
PON
SURR
VIDEO
MUTE
CD OFF
POWER
EXPANDER, LED DRIVE IC502
DATA
CLOCK
GRAPHIC EQUALIZER IC701
RESISTOR NETWORK & ANALOG SWITCH
IN 1
IN 2
ELETRICAL VOLUME IC731
CLK
DI
SWITCH Q702
R-CH
MUTE DRIVE Q599
MUTE DRIVE Q503
MUTING Q639
MUTING Q701
J602 LINE OUT
L
R
RV701 VOLUME
POWER AMP IC801
OVERLOAD DET Q801
PROTECT SWITCH Q871
PROTECTOR IC802
OFF SET
OVERLOAD
OUT
VCC MUTE
RY801
J151 HEADPHONES
TM801 SPEAKER
J801 SURROUND SPEAKER
E, AUS, EA, MY, SP, MX MODEL
SPECTRUM ANALYZER FREQUENCY SELECT IC205
COM-1
COM-2
SPECTRUM ANALYZER IC201
10kHz
4kHz
1kHz
250Hz
63Hz
IN
D3007-3009 D3011, 3012 D3501, 3502
LED
VOLTAGE DET IC203
REG/RESET IC502
EN
V OUT
V IN
RESET
B+ (5V) (CD SECTION)
BACK-UP Q201
LED DRIVE
KEY IN
BACK-UP
D204
RESET
RESET Q202, 203
IG-11G
P1-P23
FL GRID DRIVE Q205, 206
FL201 FLUORESCENT INDICATOR TUBE
FL DRIVE, KEY CONTROL, MAIN SYSTEM CONTROL IC201
X2
SIRCS
XT1
XT2
LOW
HIGH
VOL+
VOL-
CF201 .19MHz
X201 32.768kHz
REMOTE CONTROL RECEIVER IC204
D219 DBS·LOW
D217 DBS·HIGH
VOLUM MOTOR CONTROL IC2000
VOL MOTOR
POWER ON/OFF Q501
AUDIO BUS BUFFER Q302, 308
AUDIO BUS BUFFER Q407
D303
PWIN
AUB·OUT
AU·BUS
A·BUS
X IN
X OUT
X301 4MHz
TC SYSTEM CONTROL IC301
A·REV
A·FWD
CD·SYNC
B·REV
B·FWD
B·PAU
B·REC
A.CM
TEST
H/L
B·CM
RESET
CAPSTAN MOTOR DRIVE Q412
CN302 (TEST MODE)
CAPSTAN MOTOR H/NOR Q311, 312
CAPSTAN MOTOR DRIVE Q413
D401
D402
SPEED CONTROL Q71A
SPEED CONTROL Q71B
M102A CAPSTAN MOTOR
M102B CAPSTAN MOTOR
REEL MOTOR DRIVE IC402
ARM 3
ARM 1
ARM 2
BRM 3
BRM 1
BRM 2
M101A REEL MOTOR
M101B REEL MOTOR
KEY·X
KEY·Y
S3025 DIRECTION
RERLAY
S81B (STOP)
B STOP
B·HALF
S86B (HALF)
S85 (SIDE B)
S84 (SIDE A)
B+ (+5V)
B SHUT
BS/ASCH
ROTATION DET IC81B
ROTATION DET IC81A
REC/PB, EQ AMP, AMS, DOLBY AMP IC401 (1/2)
RV11A (PB LEVEL)
RV11B (PB LEVEL)
A IN
B IN
120
70
REC
PB
DOLBY NR
PAS
DOL
PB OUT
EQ
LPF
MS OUT
R IN
ABO
C IN
R-CH
NR ON/OFF
LM·ON/OFF
PAS/DOL
REC/PB
A/B
NORM/HIGH
RM·ON/OFF
S3028 DOLBY NR
OFF
ON
MUTING Q401
D499
D498
LINE MUTE DRIVE Q301
AMS BUFFER Q304
REC/PB SELECT Q305
DECK A/B SELECT Q306
DUBBING SPEED Q303
D3010 HIGH SPEED DUBBING
LM·ON/OFF
AMS IN
PASS
REC/PB
SEL A/B
DUB·H
RM ON/OFF
RELAY ON/OFF
BIAS ON/OFF
A STOP
A HALF
A SHUT
AP/BSCH
S81A (STOP)
S86A (HALF)
EQ AMP IC31A (DECK-A)
EQ AMP IC32 (DECK-B)
REC/PB SELECT SWITCH IC31B
EQ OUT
REC EQ
EQ IN
RV401 (REC LEVEL) L
REC OUT
BIAS SWITCH IC401 (2/2)
BIAS SWITCH
REC BIAS ON/OFF Q53
REC BIAS CONTROL Q411
BIAS ON/OFF SWITCH Q307
BIAS OSC Q51, 52
S82A 70U EQ (DECK-A)
S82B 70U EQ (DECK-B)
RESET IC302
D704
MUTE SWITCH Q909
POWER ON/OFF Q901
D909
B+ (13V)
B+ (5.6V)
B+ (7.5V)
+5.6V REG Q907
+7.5V REG Q902, 903
VOLTAGE CONSTANT IC901
B- (-7.5V)
B- (-13V)
-7.5V REG Q904, 905
RECT D903-906
AC DET Q908
D901
D902
PT951 POWER TRANSFORMER
CA, AEP, UP, UK, IT, EE, G, AUS MODEL
VOLTAGE SELECTOR S951
E, EA, MY, SP, MX MODEL
AC IN
B+ (12V) (TUNER SECTION)
+12V REG Q906
B+ (33.7V)
B- (-33.7V)
RECT D951
B- (-24V)
-24V REG Q910
VF

CORRECTION

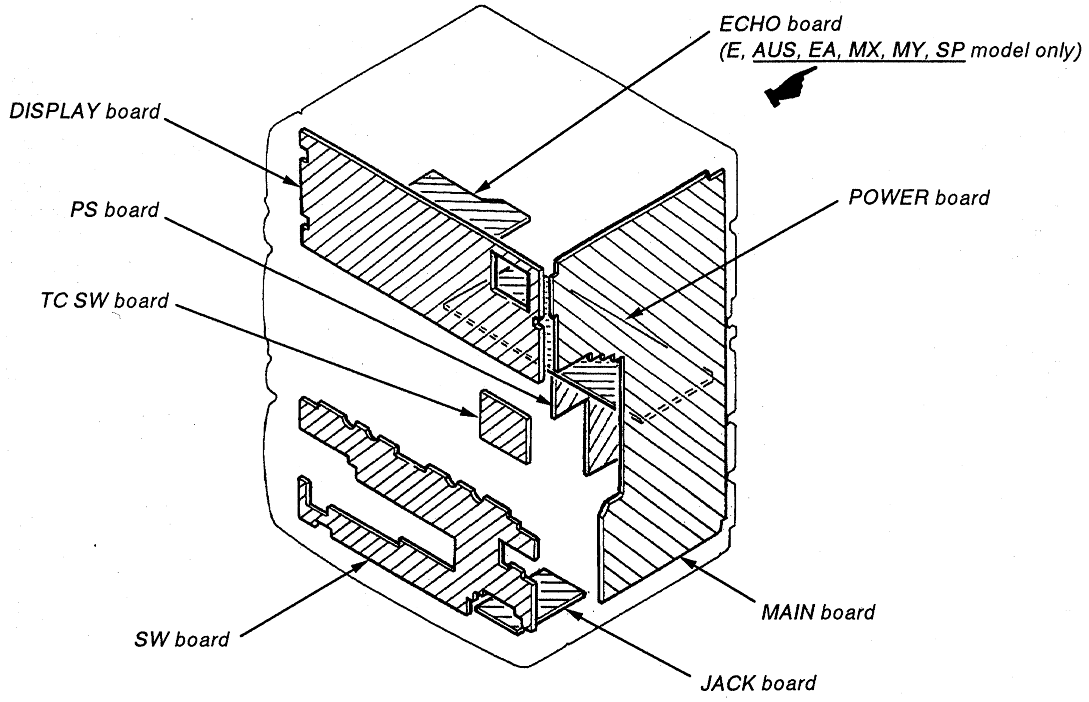
☛ : corrected portion

2-3. FRONT PANEL REMOVAL (Service Manual See page 6)



③ Flat type wire (17 core)
④ Flat type wire (7 core)
② Nut
① Knob (V)
⑥ Two screws (BVTP3× 8)
⑦ Front panel assy
⑤ Two screws (BVTP3×8)

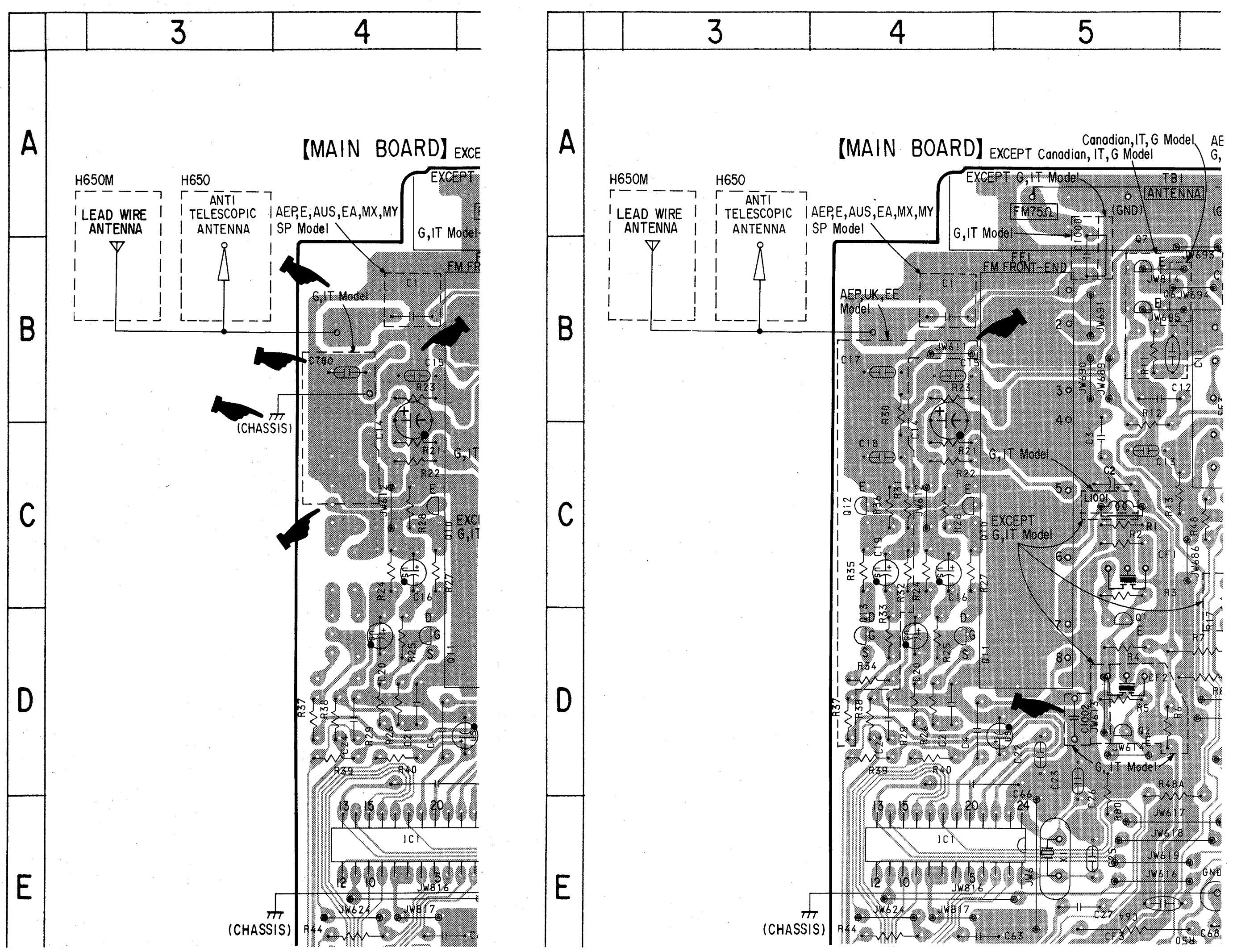
4-1. CIRCUIT BOARD LOCATION (Service Manual See page 15)



ECHO board
(E, AUS, EA, MX, MY, SP model only)
DISPLAY board
PS board
TC SW board
POWER board
SW board
MAIN board
JACK board

☛ : corrected portion

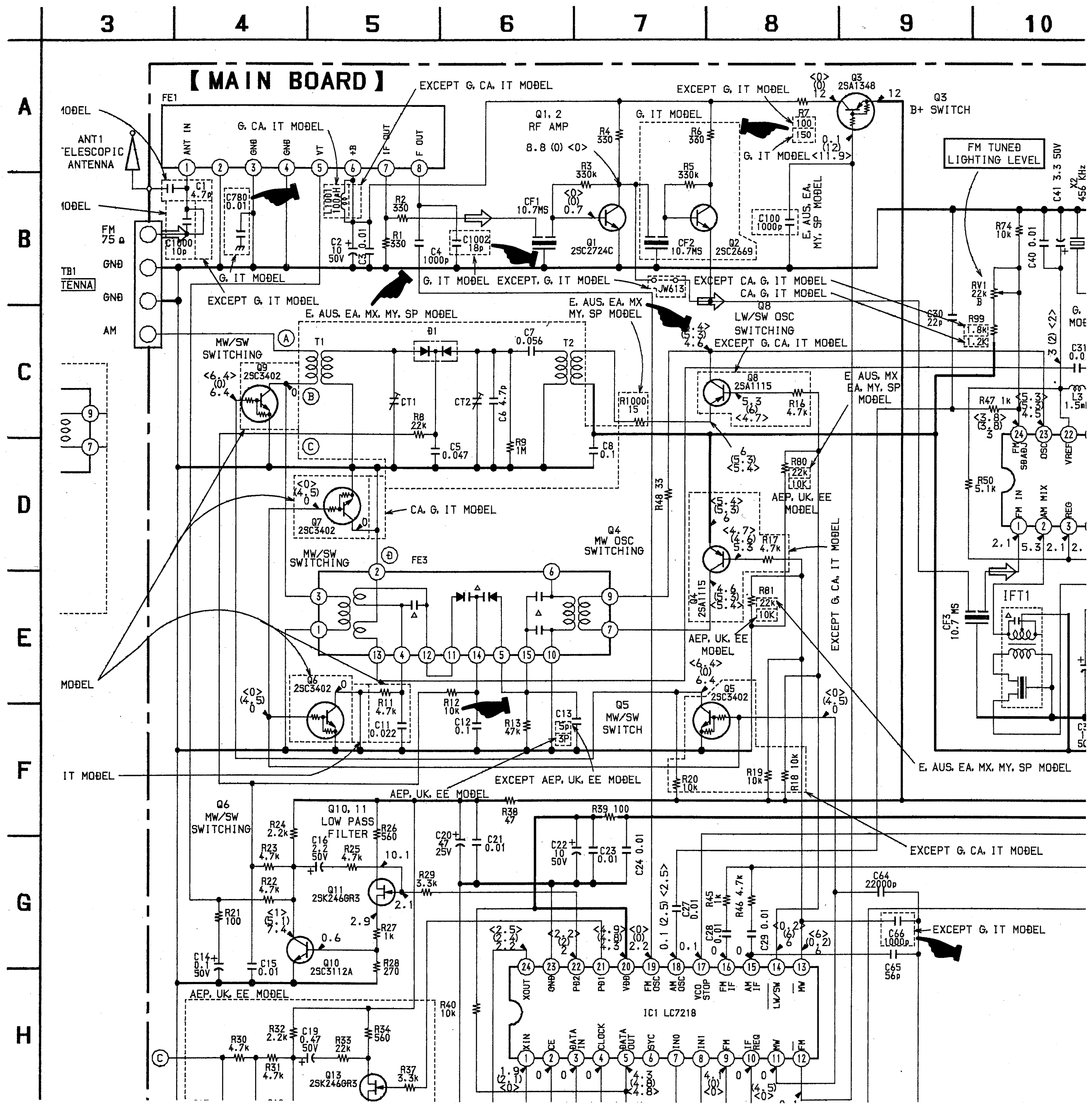
• PRINTED WIRING BOARDS – MAIN SECTION – (Service Manual See page 17)



3
4
5
A
B
C
D
E
[MAIN BOARD]
EXCEPT Canadian, IT, G Model
Canadian, IT, G Model
H650M
H650
LEAD WIRE ANTENNA
ANTI TELESCOPIC ANTENNA
AEP, E, AUS, EA, MX, MY, SP Model
G, IT Model
EXCEPT G, IT Model
AEP, UK, EE Model
TB1
ANTENNA
(GND)
FM75Ω
FE1
FM FRONT-END
EXCEPT G, IT Model
(CHASSIS)
IC1

☛ : corrected portion

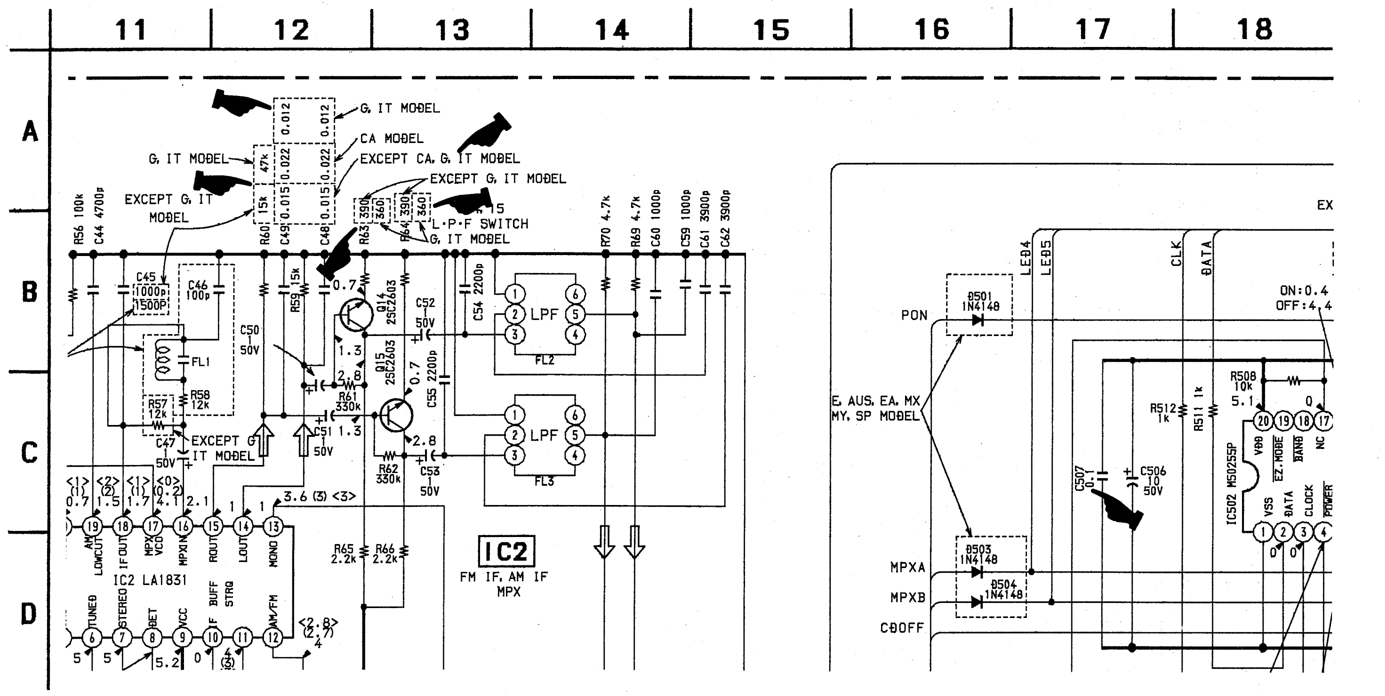
• SCHEMATIC DIAGRAM – MAIN SECTION – (Service Manual See page 19, 20)



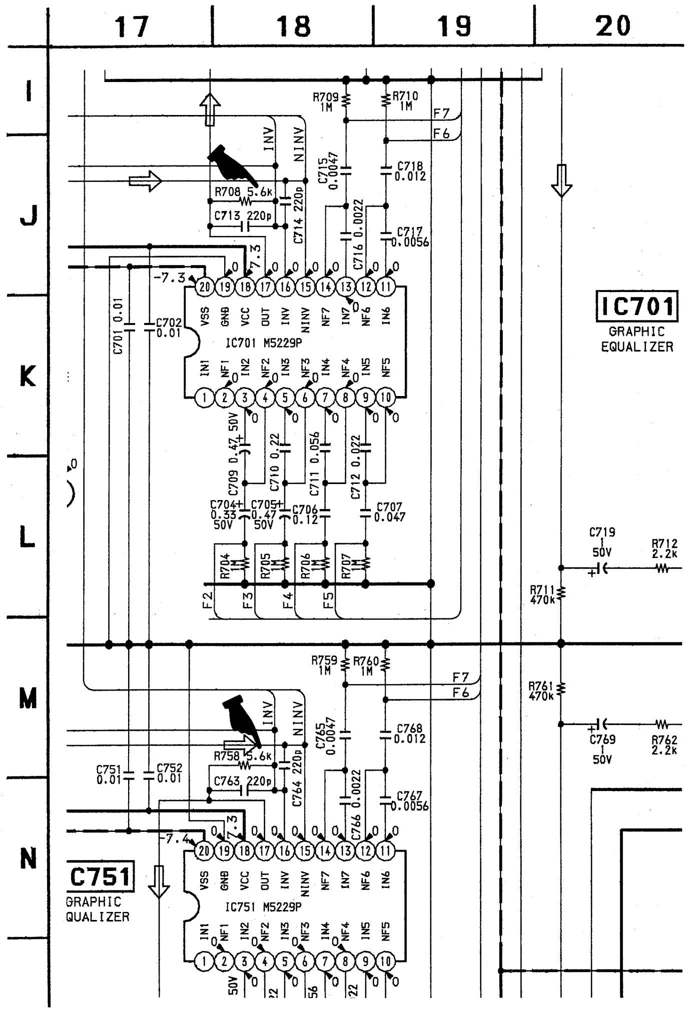
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
【MAIN BOARD】
EXCEPT G, CA, IT MODEL
EXCEPT G, IT MODEL
Q3 2SA1348
Q3 B+ SWITCH
ANT1 TELESCOPIC ANTENNA
FM 75Ω
GND
AM
TB1 ANTENNA
FE1
G, CA, IT MODEL
Q1, 2 RF AMP
CF1 10.7MS
Q1 2SC2724C
CF2 10.7MS
Q2 2SC2669
G, IT MODEL
E, AUS, EA, MX, MY, SP MODEL
FM TUNED LIGHTING LEVEL
RV1 22k
MW/SW SWITCHING
Q9 2SC3402
Q8 2SA1115
LW/SW OSC SWITCHING
EXCEPT G, CA, IT MODEL
E, AUS, MX EA, MY, SP MODEL
Q7 2SC3402
CA, G, IT MODEL
Q4 MW OSC SWITCHING
AEP, UK, EE MODEL
FE3
Q4 2SA1115
Q6 2SC3402
Q5 2SC3402
Q5 MW/SW SWITCH
IFT1
Q6 MW/SW SWITCHING
Q10, 11 LOW PASS FILTER
Q11 2SK2460R3
Q10 2SC3112A
Q13 2SK2460R3
EXCEPT AEP, UK, EE MODEL
EXCEPT G, CA, IT MODEL
EXCEPT G, IT MODEL
E, AUS, EA, MX, MY, SP MODEL
IT MODEL
IC1 LC7218

☛ : corrected portion

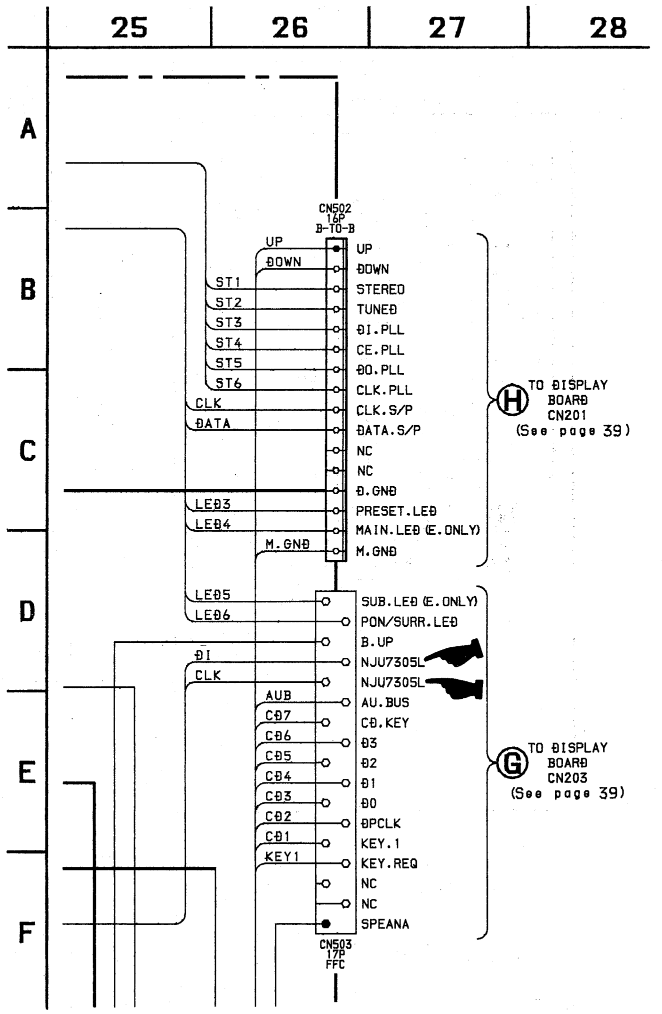
• SCHEMATIC DIAGRAM – MAIN SECTION – (Service Manual See page 20 – 22)



11
12
13
14
15
16
17
18
A
B
C
D
G, IT MODEL
CA MODEL
EXCEPT CA, G, IT MODEL
EXCEPT G, IT MODEL
L·P·F SWITCH
Q14 2SC2603
Q15 2SC2603
LPF
FL1
FL2
FL3
IC2 LA1831
IC2
FM IF, AM IF MPX
IFT1
PON
D501 1N4148
E, AUS, EA, MX MY, SP MODEL
MPXA
MPXB
CDOFF
D503 1N4148
D504 1N4148
IC502 M5025SP
ON:0.4
OFF:4.4



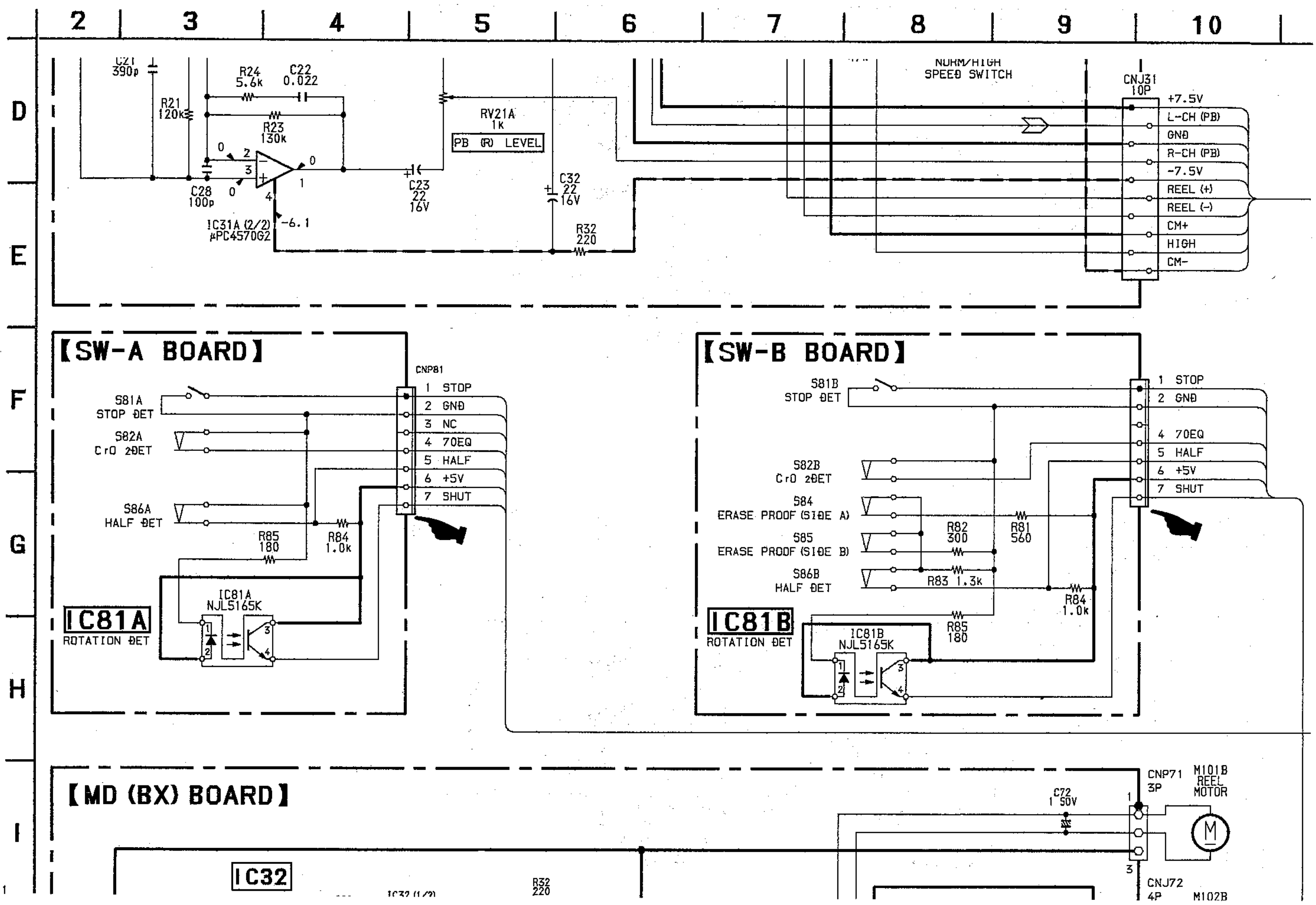
17
18
19
20
I
J
K
L
M
N
IC701 M5229P
IC701
GRAPHIC EQUALIZER
IC751 M5229P
IC751
GRAPHIC EQUALIZER

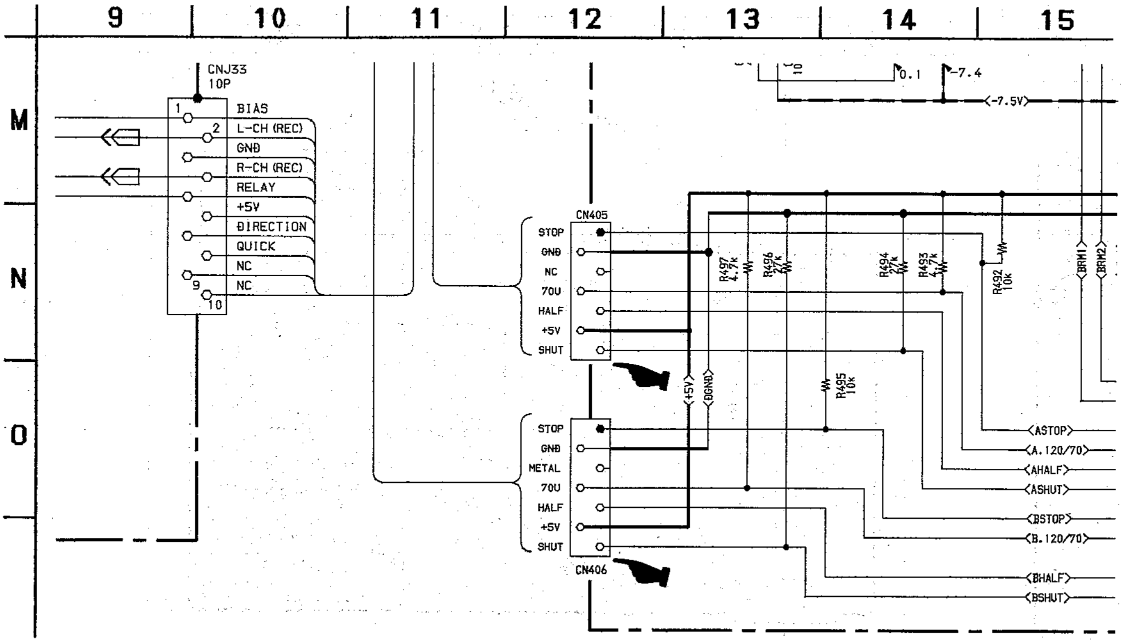


25
26
27
28
A
B
C
D
E
F
CN502 16P B-TO-B
UP
DOWN
STEREO
TUNED
DI.PLL
CE.PLL
DO.PLL
CLK.PLL
CLK.S/P
DATA.S/P
NC
D.GND
PRESET.LED
MAIN.LED (E.ONLY)
M.GND
TO DISPLAY BOARD CN201 (See page 39)
SUB.LED (E.ONLY)
PON/SURR.LED
B.UP
NJU7305L
AU.BUS
CD.KEY
D3
D2
D1
D0
DPCLK
KEY.1
KEY.REQ
SPEANA
CN503 17P FFC
TO DISPLAY BOARD CN203 (See page 39)

☛ : corrected portion

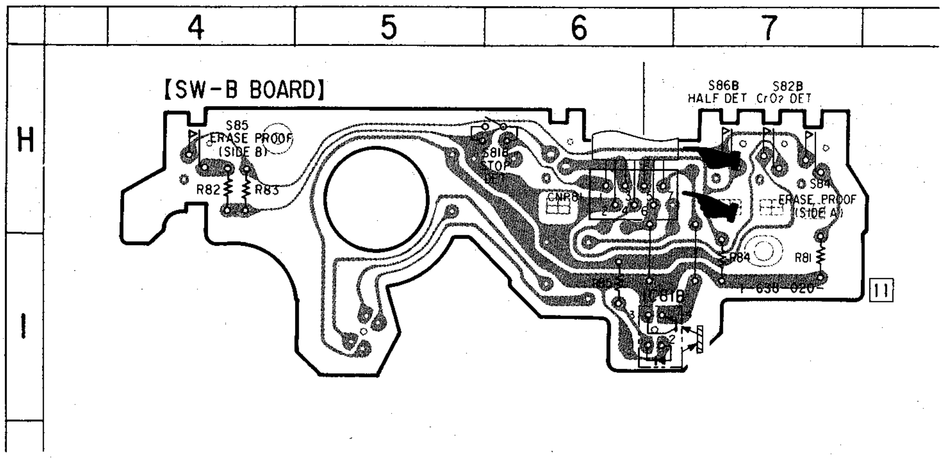
- **SCHEMATIC DIAGRAM – DECK SECTION –** (Service Manual See page 24, 25)

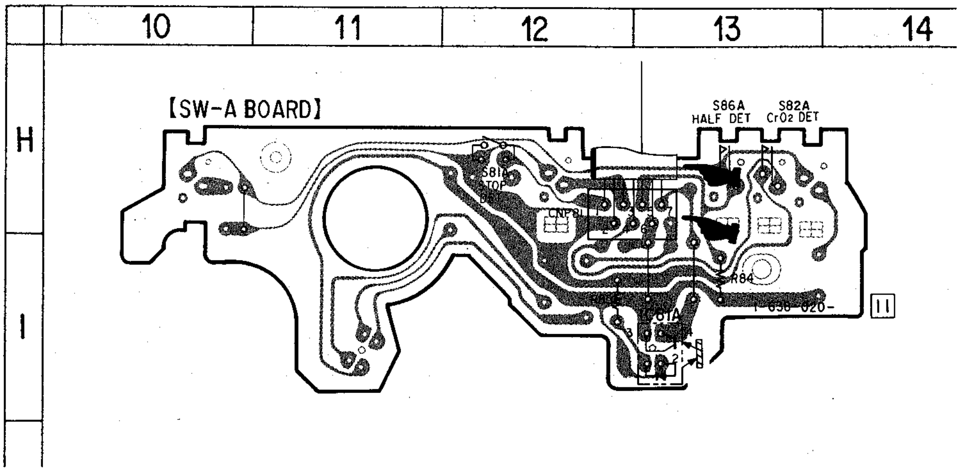

2
3
4
5
6
7
8
9
10
D
E
F
G
H
I
C21 390p
R24 5.6k
C22 0.022
R21 120k
R23 130k
C28 100p
IC31A (2/2) μPC4570G2
-6.1
RV21A 1k
PB (R) LEVEL
C23 22 16V
C32 22 16V
R32 220
NORM/HIGH SPEED SWITCH
CNJ31 10P
+7.5V
L-CH (PB)
GND
R-CH (PB)
-7.5V
REEL (+)
REEL (-)
CM+
HIGH
CM-
[SW-A BOARD]
CNP81
1 STOP
2 GND
3 NC
4 70EQ
5 HALF
6 +5V
7 SHUT
S81A STOP DET
S82A CrO 2DET
S86A HALF DET
R85 180
R84 1.0k
IC81A NJL5165K
IC81A ROTATION DET
[SW-B BOARD]
S81B STOP DET
S82B CrO 2DET
S84 ERASE PROOF (SIDE A)
S85 ERASE PROOF (SIDE B)
S86B HALF DET
R82 300
R81 560
R83 1.3k
R84 1.0k
R85 180
IC81B NJL5165K
IC81B ROTATION DET
1 STOP
2 GND
4 70EQ
5 HALF
6 +5V
7 SHUT
[MD (BX) BOARD]
IC32
R32 220
C72 1 50V
CNP71 3P
M101B REEL MOTOR
CNJ72 4P
M102B

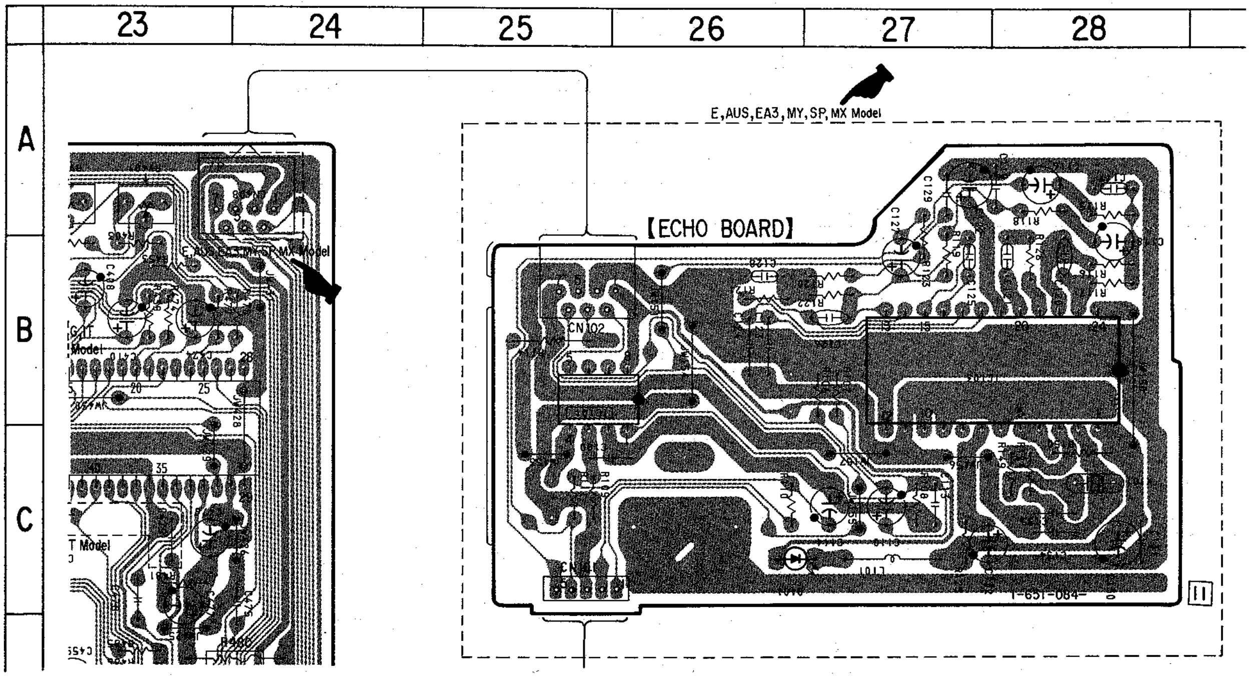

9
10
11
12
13
14
15
M
N
O
CNJ33 10P
BIAS
L-CH (REC)
GND
R-CH (REC)
RELAY
+5V
DIRECTION
QUICK
NC
NC
0.1
-7.4
-7.5V
CN405
STOP
GND
NC
70U
HALF
+5V
SHUT
R497 4.7k
R496 27k
R494 27k
R493 4.7k
R492 10k
R495 10k
BRM1
BRM2
+5V
DGND
STOP
GND
METAL
70U
HALF
+5V
SHUT
CN406
ASTOP
A.120/70
AHALF
ASHUT
BSTOP
B.120/70
BHALF
BSHUT

☛ : corrected portion

- **PRINTED WIRING BOARDS – DECK SECTION –** (Service Manual See page 29 – 32)

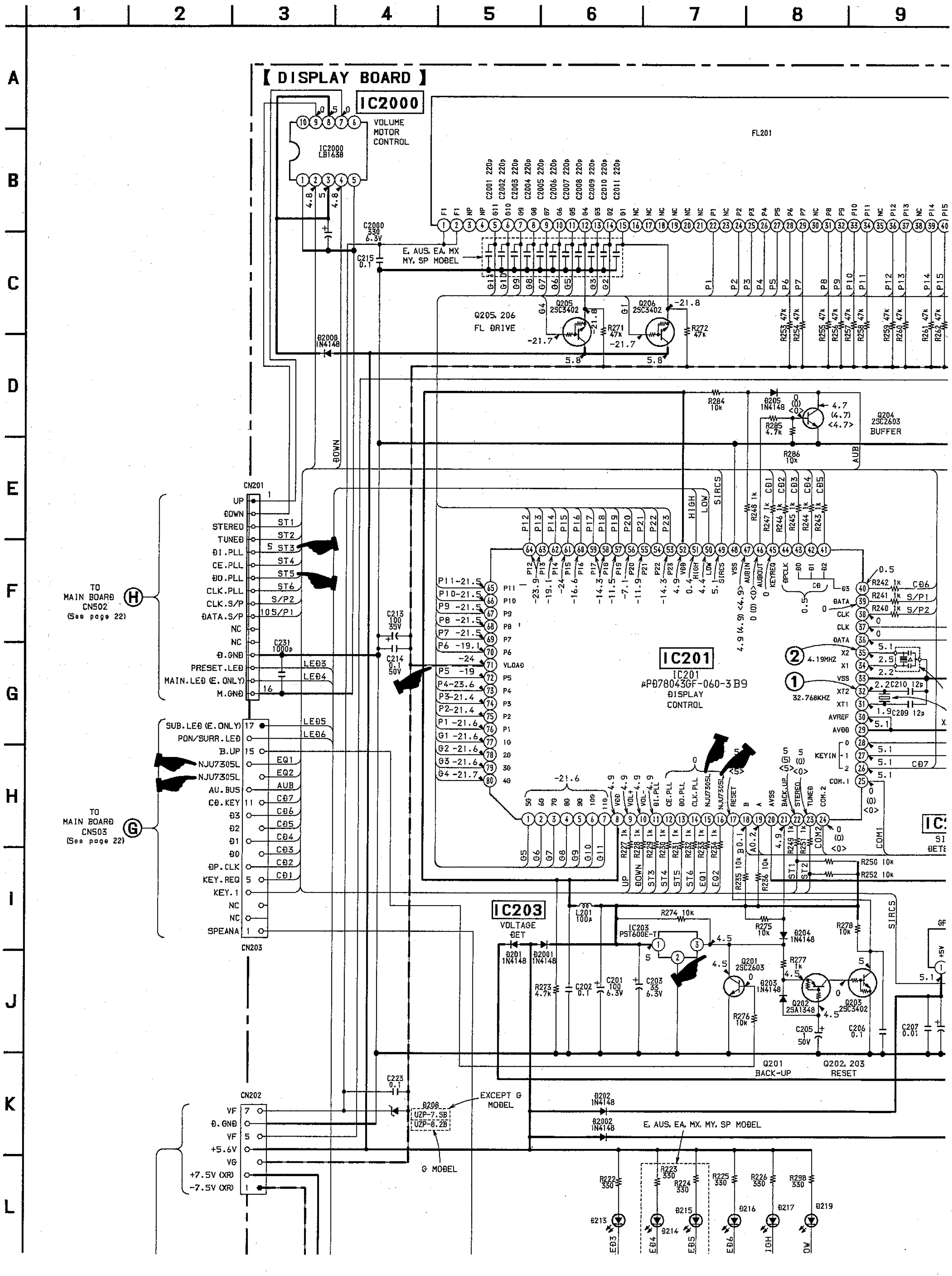

4
5
6
7
H
I
[SW-B BOARD]
S86B HALF DET
S82B CrO2 DET
S85 ERASE PROOF (SIDE B)
R82
R83
S81B STOP DET
CNP81
S84 ERASE PROOF (SIDE A)
R84
R81
S81B
1-638-020-
11


10
11
12
13
14
H
I
[SW-A BOARD]
S86A HALF DET
S82A CrO2 DET
S81A STOP DET
CNP81
R84
S81A
1-638-020-
11


23
24
25
26
27
28
A
B
C
E,AUS,EA3,MY,SP,MX Model
Model
T Model
[ECHO BOARD]
CN102
C129
C127
C128
C125
R118
R119
R120
R122
R123
R110
IC101
L101
CN101
1-651-084-
11

☛ : corrected portion

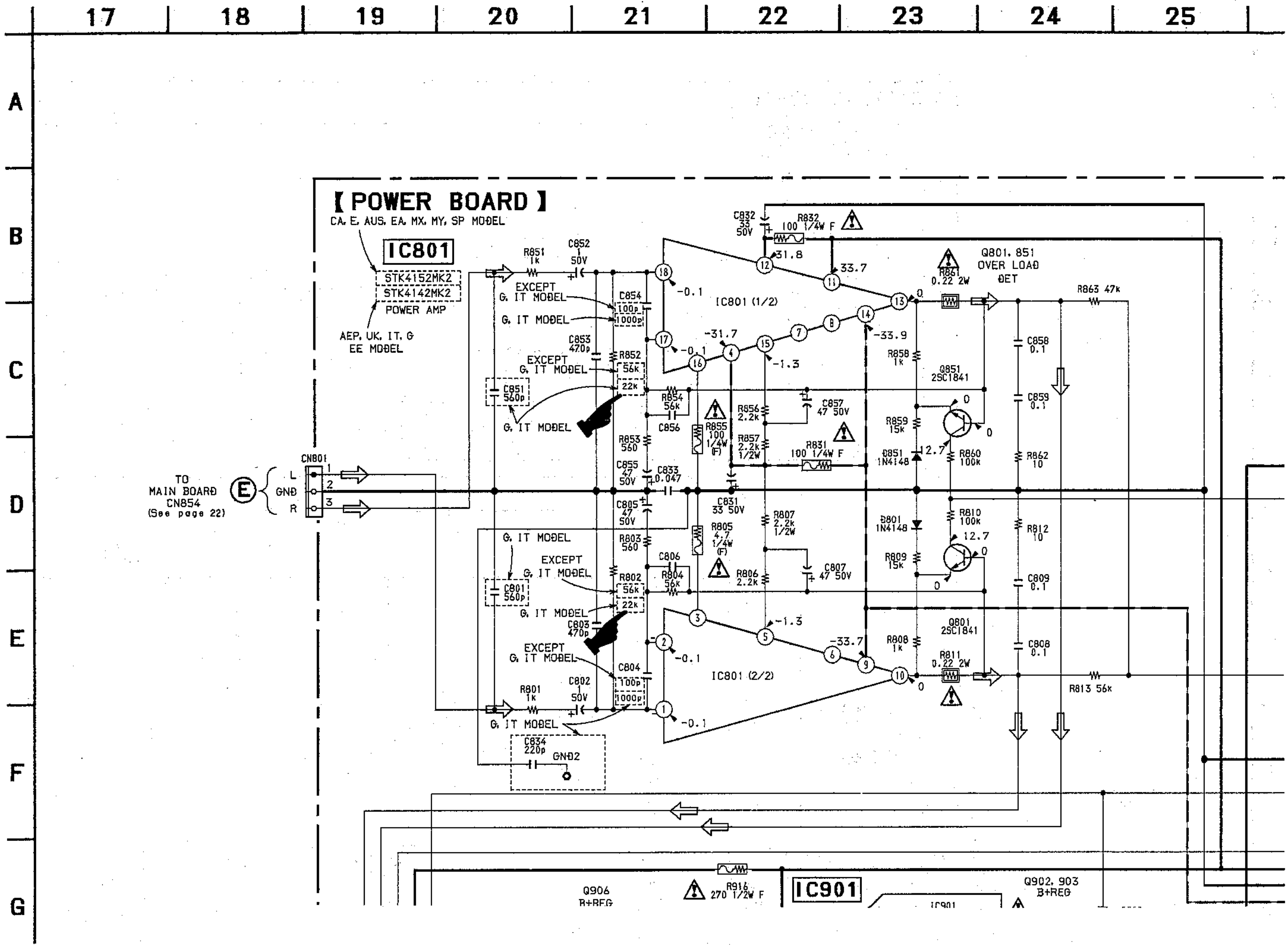
• SCHEMATIC DIAGRAM – DISPLAY SECTION – (Service Manual See page 39)



1 2 3 4 5 6 7 8 9
A B C D E F G H I J K L
【DISPLAY BOARD】
IC2000
VOLUME MOTOR CONTROL
IC2000 LB1638
FL201
C2000 330 6.3V
C215 0.1
E. AUS, EA, MX MY, SP MODEL
Q205, 206 FL DRIVE
Q205 2SC3402
Q206 2SC3402
D2000 1N4148
R284 10k
D205 1N4148
R285 4.7k
Q204 2SC2603 BUFFER
R286 10k
CN201
UP
DOWN
STEREO
TUNED
DI.PLL
CE.PLL
DO.PLL
CLK.PLL
CLK.S/P
DATA.S/P
NC
NC
D.GND
PRESET.LED
MAIN.LED (E. ONLY)
M.GND
TO MAIN BOARD CN502 (See page 22)
C231 1000p
C213 100 35V
C214 0.1 50V
IC201
IC201 μPD78043GF-060-3B9 DISPLAY CONTROL
4.19MHZ
32.768KHZ
C210 12p
C209 12p
SUB.LED (E. ONLY)
PON/SURR.LED
B.UP
NJU7305L
NJU7305L
AU.BUS
CD.KEY
D3
D2
D1
D0
DP.CLK
KEY.REQ
KEY.1
NC
NC
SPEANA
TO MAIN BOARD CN503 (See page 22)
CN203
IC203
VOLTAGE DET
IC203 PST600E-T
L201 100μ
D201 1N4148
D2001 1N4148
R273 4.7k
C202 0.1
C201 100 6.3V
C203 33 6.3V
R274 10k
R275 10k
D204 1N4148
Q201 2SC2603
D203 1N4148
R277 1k
Q202 2SA1348
Q203 2SC3402
R276 10k
R278 10k
C205 1 50V
C206 0.1
C207 0.01
Q201 BACK-UP
Q202, 203 RESET
R250 10k
R252 10k
CN202
VF
D.GND
VF
+5.6V
VG
+7.5V (XR)
-7.5V (XR)
C223 0.1
D208 UZP-7.5B UZP-6.2B
EXCEPT G MODEL
G MODEL
D202 1N4148
D2002 1N4148
E. AUS, EA, MX, MY, SP MODEL
R222 330
R223 330
R224 330
R225 330
R226 330
R298 330
D213
D214
D215
D216
D217
D219

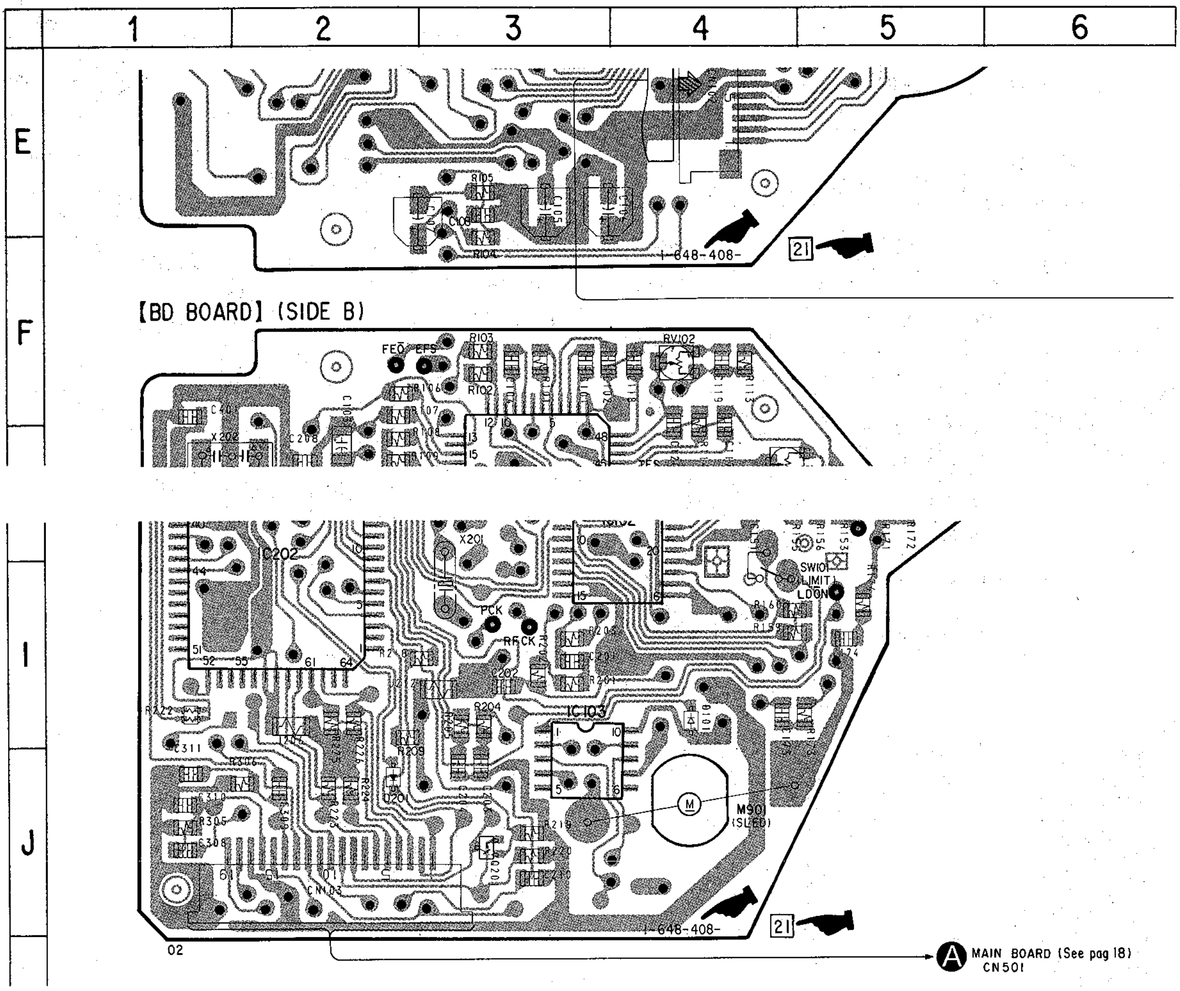
: corrected portion

• SCHEMATIC DIAGRAM – DISPLAY SECTION – (Service Manual See page 41)

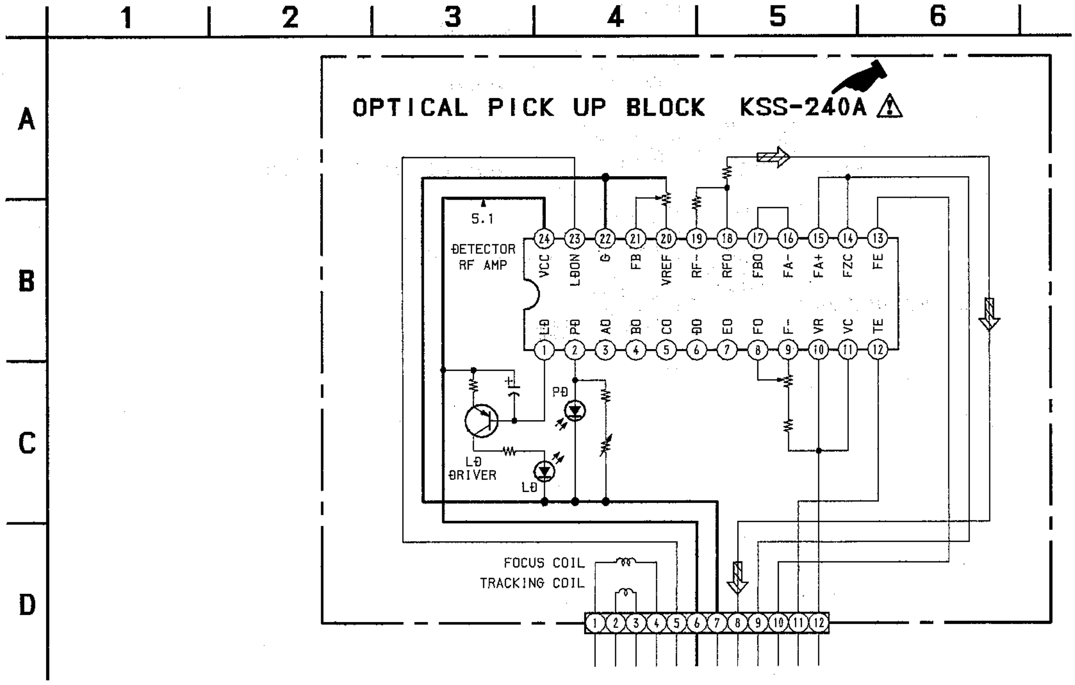

17
18
19
20
21
22
23
24
25
A
B
C
D
E
F
G
【POWER BOARD】
CA, E, AUS, EA, MX, MY, SP MODEL
IC801
STK4152MK2
STK4142MK2
POWER AMP
AEP, UK, IT, G
EE MODEL
TO
MAIN BOARD
CN854
(See page 22)
E
L
GND
R
CN801
1
2
3
R851 1k
C852 1 50V
EXCEPT G, IT MODEL
C854 100p
G, IT MODEL 1000p
C853 470p
R852 56k
22k
C851 560p
G, IT MODEL
R853 560
C855 47 50V
C833 0.047
C805 47 50V
R803 560
C856
R854 56k
R855 100 1/4W (F)
R856 2.2k
R857 2.2k 1/2W
C857 47 50V
R831 100 1/4W F
C831 33 50V
R805 4.7 1/4W (F)
R807 2.2k 1/2W
C806
R804 56k
R806 2.2k
C807 47 50V
C801 560p
R802 56k
22k
C803 470p
C804 100p
1000p
R801 1k
C802 1 50V
C834 220p
GND2
C832 33 50V
R832 100 1/4W F
31.8
33.7
-0.1
-31.7
-1.3
-33.9
-33.7
0
12.7
IC801 (1/2)
IC801 (2/2)
Q801, 851
OVER LOAD
DET
R861 0.22 2W
R863 47k
R858 1k
Q851 2SC1841
R859 15k
D851 1N4148
R860 100k
C858 0.1
C859 0.1
R862 10
D801 1N4148
R810 100k
R809 15k
R812 10
C809 0.1
Q801 2SC1841
R808 1k
R811 0.22 2W
C808 0.1
R813 56k
Q906
B+REG
R916 270 1/2W F
IC901
Q902, 903
B+REG

☛ : corrected portion

• PRINTED WIRING BOARDS – CD SECTION – (Service Manual See page 47)

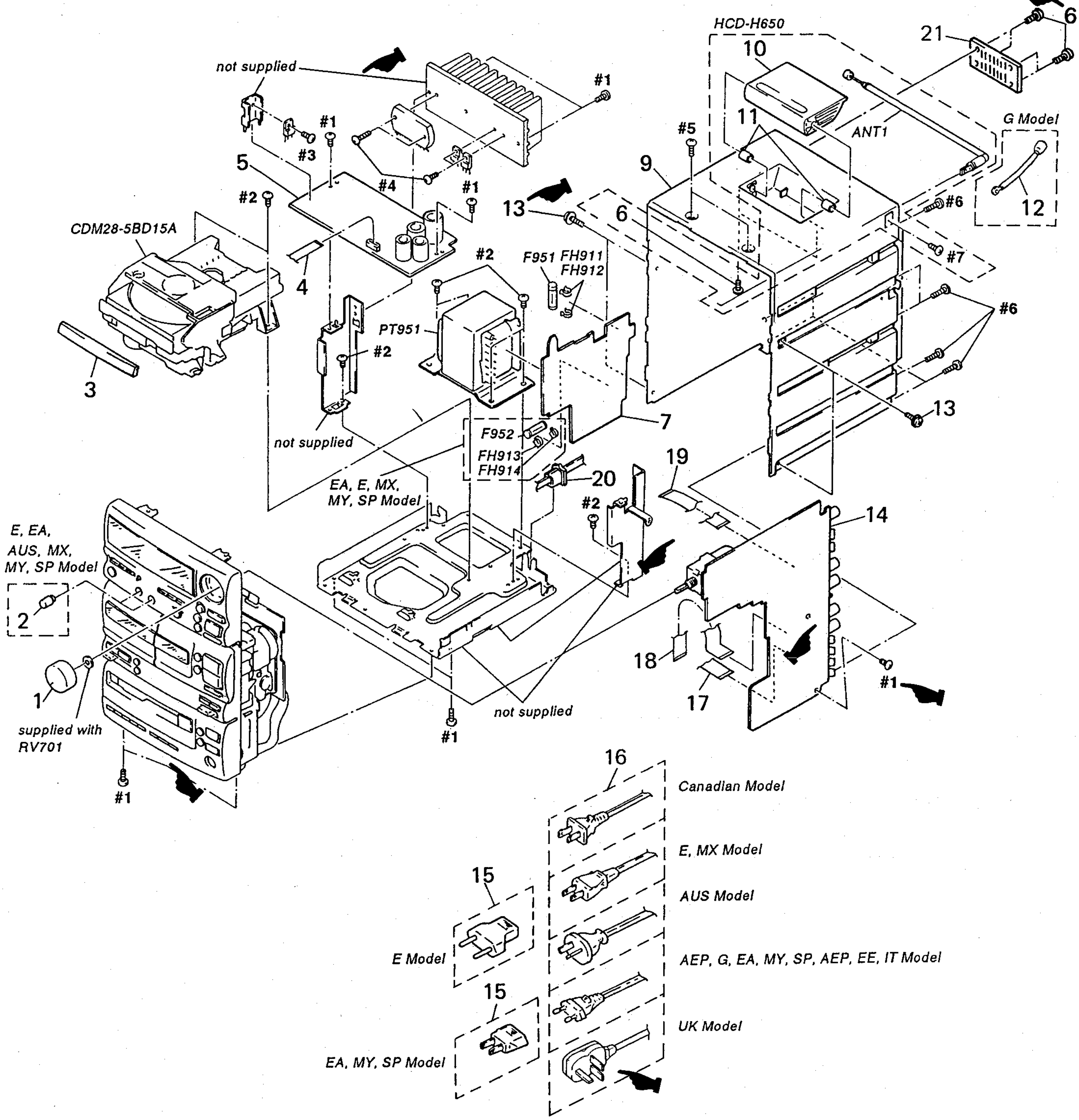

1
2
3
4
5
6
E
F
I
J
R105
C108
C105
R104
1-648-408-
21
[BD BOARD] (SIDE B)
FEO
EFS
R103
RV102
R106
R102
C40
X202
C208
C202
X201
PCK
RFCK
R203
R204
IC103
R209
D201
R219
M901 (SLED)
SW101 (LIMIT)
LDON
R160
R159
R222
C311
R306
R310
R305
CN103
02
1-648-408-
21
A
MAIN BOARD (See pag 18)
CN501

• SCHEMATIC DIAGRAM – CD SECTION – (Service Manual See page 49)


1
2
3
4
5
6
A
B
C
D
OPTICAL PICK UP BLOCK KSS-240A ⚠
5.1
DETECTOR
RF AMP
24 VCC
23 LDON
22 G
21 FB
20 VREF
19 RF-
18 RFO
17 FBO
16 FA-
15 FA+
14 FZC
13 FE
1 LD
2 PD
3 AO
4 BO
5 CO
6 DO
7 EO
8 FO
9 F-
10 VR
11 VC
12 TE
PD
LD
DRIVER
LD
FOCUS COIL
TRACKING COIL
1
2
3
4
5
6
7
8
9
10
11
12

: corrected portion

- **EXPLODED VIEWS** (Service Manual See page 52)


not supplied
#1
#3
#1
#4
#1
5
#2
CDM28-5BD15A
4
3
HCD-H650
10
21
6
11
ANT1
G Model
#5
9
13
6
#6
12
#7
#2
F951
FH911
FH912
PT951
#2
#6
7
13
not supplied
F952
FH913
FH914
EA, E, MX, MY, SP Model
19
20
#2
14
E, EA, AUS, MX, MY, SP Model
2
1
supplied with RV701
18
17
#1
not supplied
#1
#1
16
Canadian Model
E, MX Model
AUS Model
15
E Model
AEP, G, EA, MY, SP, AEP, EE, IT Model
15
UK Model
EA, MY, SP Model

☛ : corrected portion

5-4. MECHANISM DECK SECTION-1 (Service Manual See page 56)
(DECK A : TCM-190RA12AL)

(DECK B : TCM-190RB53A)

5-5. MECHANISM DECK SECTION-2 (Service Manual See page 57)
(DECK A : TCM-190RA12AL)

(DECK B : TCM-190RB53A)

5-6. CD MECHANISM SECTION-1 (Service Manual See page 58)
(CDM28-5BD15A)

- **ELECTRICAL PARTS LIST** (Servic Manual See page 64 – 80)

INCORRECT → **CORRECT**

Ref. No.	Part No.	Description	Part No.	Description	Remark
R2052 (Page 64)	1-249-429-11	CARBON 10K 5% 1/4W (G)	————		Deleted
C48 (Page 67)	1-130-485-00	MYLAR 0.015uF 5% 50V (EXCEPT Canadian)	1-130-485-00	MYLAR 0.15uF 5% 50V (EXCEPT Canadian, G, IT)	Changed
C48 (Page 67)	————		1-130-489-00	MYLAR 0.012uF 5% 50V (G, IT)	Added
C49 (Page 67)	1-130-485-00	MYLAR 0.15uF 5% 50V (EXCEPT Canadian)	1-130-485-00	MYLAR 0.15uF 5% 50V (EXCEPT Canadian, G, IT)	Changed
C49 (Page 67)	————		1-130-489-00	MYLAR 0.012uF 5% 50V (G, IT)	Added
C66 (Page 67)	1-162-294-31	CERAMIC 0.001uF 10% 50V	1-162-294-31	CERMIC 0.001uF 10% 50V (EXCEPT G, IT)	Changed
C507 (Page 67)	1-161-379-00	CERAMIC 0.01uF 20% 25V	1-164-159-11	CERAMIC 0.1uF 20% 50V	Changed
C1002 (Page 68)	————		1-162-205-31	CERAMIC 18PF 5% 50V (G, IT)	Added
R7 (Page 69)	1-247-807-31	CARBON 100 5% 1/4W	1-247-807-31 1-247-811-31	CARBON 100 5% 1/4W (EXCEPT G, IT) CARBON 150 5% 1/4W (G, IT)	Changed
R12 (Page 69)	1-249-437-11	CARBON 47K 5% 1/4W	1-249-429-11	CARBON 10K 5% 1/4W	Changed
R59 (Page 70)	1-249-431-11	CARBON 15K 5% 1/4W	1-249-431-11 1-249-437-11	CARBON 15K 5% 1/4W (EXCEPT G, IT) CARBON 47K 5% 1/4W (G, IT)	Changed
R60 (Page 70)	1-249-431-11	CARBON 15K 5% 1/4W	1-249-431-11 1-249-437-11	CARBON 15K 5% 1/4W (EXCEPT G, IT) CARBON 47K 5% 1/4W (G, IT)	Changed
R63 (Page 70)	1-249-412-11	CARBON 390 5% 1/4W	1-249-412-11 1-247-820-11	CARBON 390 5% 1/4W (EXCEPT G, IT) CARBON 360 5% 1/4W (G, IT)	Changed
R64 (Page 70)	1-249-412-11	CARBON 390 5% 1/4W	1-249-412-11 1-247-820-11	CARBON 390 5% 1/4W (EXCEPT G, IT) CARBON 360 5% 1/4W (G, IT)	Changed
R708 (Page 71)	1-249-427-11	CARBON 6.8K 5% 1/4W	1-249-426-11	CARBON 5.6K 5% 1/4W	Changed
R758 (Page 71)	1-249-427-11	CARBON 6.8K 5% 1/4W	1-249-426-11	CARBON 5.6K 5% 1/4W	Changed
C780 (Page 74)	————		1-161-379-00	CERAMIC 0.01uF 20% 25V (G, IT)	Added
R802 (Page 75)	1-249-438-11	CARBON 56K 5% 1/4W	1-249-433-11	CARBON 22K 5% 1/4W	Changed
R852 (Page 71)	1-249-438-11	CARBON 56K 5% 1/4W	1-249-433-11	CARBON 22K 5% 1/4W	Changed
#11 (Page 80)	7-621-255-15	SCREW +P 2X3	————		Deleted

HCD-H650/H650M

SONY

SERVICE MANUAL

AEP Model
E Model
Australian Model
HCD-H650

Canadian Model
AEP Model
UK Model
HCD-H650M

SUPPLEMENT-1

File this Supplement with the Service Manual.

Subject :

1. MECHANICAL ADJUSTMENTS
2. EXPLANATION OF IC TERMINALS
3. IC BLOCK DIAGRAM
4. BLOCK DIAGRAM
5. CORRECTION

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

The following caution label is located inside the unit.

CAUTION :	INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
ADVARSEL :	USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VAROI :	AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA LASERSATEILYLLE.
VARNING :	LASERSTRÅLING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD.
ADVARSEL :	USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN.

TABLE OF CONTENTS

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EXPLANATION OF IC TERMINALS 4
IC BLOCK DIAGRAM 8
BLOCK DIAGRAM (1) 9
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CORRECTION 15

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Consumer A&V Products Company
Home A&V Products Div.

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Quality Engineering Dept.

EXPLANATION OF IC TERMINALS

IC201 DISPLAY CONTROLLER (μPD78043GF-060-3B9)

Pin No.	Pin name	I/O	Description
1	5G	O	FL display drive.
2	6G	O	
3	7G	O	
4	8G	O	
5	9G	O	
6	10G	O	
7	11G	O	
8	VDD	–	+5v.
9	VOL+	O	Volume motor control output. "H" : Volume up
10	VOL –	O	Volume motor control output. "H" : Volume down
11	DI • PLL	I	Serial data input from tuner PLL IC. (LC7218)
12	CE • PLL	O	Chip select output to tuner PLL IC. (LC7218)
13	DO • PLL	O	Serial data output to tuner PLL IC. (LC7218)
14	CLK • PLL	O	Serial clock output to tuner PLL IC. (LC7218)
15	DI • 7522	O	Serial data output equalizer controller. (IC731, NJU7305L)
16	CLK • 7522	O	Serial clock output equalizer controller. (IC731, NJU7305L)
17	RESET	I	Reset. "L" : Reset
18	B	O	Spectrum analyzer input switching output.
19	A	O	
20	AVss	–	GND
21	BACK • UP	I	Backup mode detection input. "L" : Backup mode
22	STEREO	I	Stereo discrimination from FM/AM IF amplifier (LA1831). "L" : Stereo
23	TUNED	I	Tuning discrimination from FM/AM IF amplifier (LA1831). "L" : Tuning
24	COM2	I	Spectrum analyzer input. (63Hz, 250Hz, 1kHz)
25	COM1	I	Spectrum analyzer input. (4kHz, 10kHz)
26	KEY. IN2	I	Key input.
27	KEY. IN1	I	
28	KEY. IN0	I	
29	AVDD	–	+5V power supply.
30	AV. REF	–	+5V power supply.
31	XT1	I	Subsystem clock (32.768kHz). Connected to crystal oscillator.
32	XT2	O	
33	Vss	–	GND
34	X1	I	System clock (4.19MHz). Connected to crystal oscillator.
35	X2	O	
36	DATA	I/O	Write/read data I/O with EEPROM (X24C01P)
37	CLK	O	Serial clock output to EEPROM (X24C01P)
38	CLK	O	Serial clock output to 16-bit serial/parallel converter. (M50255P)
39	DATA	O	Serial data output to 16-bit serial/parallel converter. (M50255P)
40	D3	I/O	Dispaly data 3 input and key data 3 output with CD controller. (μ PD75116GF)

Pin No.	Pin name	I/O	Description
41	D2	I/O	Display data 2 input and key data 2 output with CD controller. (μ PD75116GF)
42	D1	I/O	Display data 1 input and key data 1 output with CD controller.(μ PD75116GF)
43	D0	I/O	Display data 0 input and key data 0 output with CD controller. (μ PD75116GF)
44	DPCLK	I	Serial clock input from CD controller. (μ PD75116GF)
45	KEYREQ	O	Key data outpu request to CD controller.. (μ PD75116GF)
46	AUBOUT	O	Audio bus output.
47	AUBIN	I	Audio bus input.
48	Vss	–	GND
49	SIRCS	O	Infrared remote commander signal input.
50	LOW	O	DBS LOW LED output.
51	HIGH	O	DBS HIGH LED output.
52	VDD	–	+5V power supply.
53	P23	O	FL display drive.
54	P22	O	
55	P21	O	
56	P20	O	
57	P19	O	
58	P18	O	
59	P17	O	
60	P16	O	
61	P15	O	
62	P14	O	
63	P13	O	
64	P12	O	
65	P11	O	
66	P10	O	
67	P9	O	
68	P8	O	
69	P7	O	
70	P6	O	
71	VLOAD	–	– 24V power supply for dirving FL display.
72	P5	O	FL display drive.
73	P4	O	
74	P3	O	
75	P2	O	
76	P1	O	
77	1G	O	
78	2G	O	
79	3G	O	
80	4G	O	

IC301 DECK CONTROLLER (M50964-260FP)

<table>
<tr><th>Pin No.</th><th>Pin name</th><th>I/O</th><th>Description</th></tr>
<tr><td>1</td><td>G</td><td></td><td>GND</td></tr>
<tr><td>2</td><td>G</td><td></td><td>GND</td></tr>
<tr><td>3</td><td>G</td><td></td><td>GND</td></tr>
<tr><td>4</td><td></td><td></td><td>Connected +5V.</td></tr>
<tr><td>5</td><td>G</td><td></td><td>GND</td></tr>
<tr><td>6</td><td>B HALF</td><td>I</td><td>Deck B record prevention claw A, B detection input. (Analog)
<table>
<tr><td>Voltage (V)</td><td>1V</td><td>1.9V</td><td>2.8V</td><td>3.9V</td><td>5V</td></tr>
<tr><td>Half</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td><td>OFF</td></tr>
<tr><td>E. PROOF A</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>E. PROOF B</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td></tr>
</table></td></tr>
<tr><td>7</td><td>KEY Y</td><td>I</td><td rowspan="2">KEY input.
<table>
<tr><td>Voltage (V)</td><td>0</td><td>0.3</td><td>0.7</td><td>1.2</td><td>1.7</td><td>2.3</td><td>2.8</td><td>3.4</td><td>4.0</td><td>4.5</td><td>5.0</td></tr>
<tr><td>KEY Y</td><td></td><td></td><td></td><td></td><td></td><td>A◀◀</td><td>A▶▶</td><td></td><td></td><td>RELAY</td><td>OFF</td></tr>
<tr><td>KEY X</td><td>A■</td><td>A▶</td><td>A◀</td><td></td><td></td><td></td><td>HIGH SPEED DUBBING</td><td></td><td>CD</td><td></td><td></td></tr>
</table></td></tr>
<tr><td>8</td><td>KEY X</td><td>I</td></tr>
<tr><td>9</td><td>AMS IN</td><td>I</td><td>AMS signal input.</td></tr>
<tr><td>10</td><td>LM $\overline{\text{ON}}$/OFF</td><td>O</td><td>Line mute output.</td></tr>
<tr><td>11</td><td>RM $\overline{\text{ON}}$/OFF</td><td>O</td><td>Mute output.</td></tr>
<tr><td>12</td><td>RELAY $\overline{\text{ON}}$/OFF</td><td>O</td><td>Control output to REC/PB select switch. (IC31)</td></tr>
<tr><td>13</td><td>$\overline{\text{REC}}$/PB</td><td>O</td><td>Dolby IC REC/PB select output.</td></tr>
<tr><td>14</td><td>EQ70</td><td>O</td><td>Playback EQ output for playing deck. (Not used) (Open)</td></tr>
<tr><td>15</td><td>SEL A/$\overline{\text{B}}$</td><td>O</td><td>Dolby IC PB input Deck A/B select output.</td></tr>
<tr><td>16</td><td>AMS A/$\overline{\text{B}}$</td><td>O</td><td>AMS AMP input Deck A/B select output. (Not used) (Open)</td></tr>
<tr><td>17</td><td>AU BUS</td><td>I</td><td>AUDIO BUS input.</td></tr>
<tr><td>18</td><td>$\overline{\text{BIAS}}$ ON/$\overline{\text{OFF}}$</td><td>O</td><td>Bias oscillation output.</td></tr>
<tr><td>19</td><td>AUB OUT</td><td>O</td><td>AUDIO BUS output.</td></tr>
<tr><td>20</td><td>A BUS</td><td>I</td><td>AUDIO BUS normal input.</td></tr>
<tr><td>21</td><td>NC</td><td>–</td><td>Not used.</td></tr>
<tr><td>22</td><td>NC</td><td>–</td><td>Not used.</td></tr>
<tr><td>23</td><td>NC</td><td>–</td><td>Not used.</td></tr>
<tr><td>24</td><td>Vss</td><td></td><td>GND</td></tr>
<tr><td>25</td><td>$\overline{\text{RESET}}$</td><td>I</td><td>Microcomputer reset input.</td></tr>
<tr><td>26</td><td>XIN</td><td>I</td><td>Clock input. (4MHz)</td></tr>
<tr><td>27</td><td>XOUT</td><td>O</td><td>Clock output. (4MHz)</td></tr>
<tr><td>28</td><td>ϕ</td><td>O</td><td>Not used. (Open)</td></tr>
<tr><td>29</td><td>Vss</td><td></td><td>GND</td></tr>
<tr><td>30</td><td>PW IN</td><td>I</td><td>POWER OFF detection input.</td></tr>
<tr><td>31</td><td>A STOP</td><td>I</td><td>Deck A STOP switch input.</td></tr>
<tr><td>32</td><td>A HLAF</td><td>I</td><td>Deck A Half switch input.</td></tr>
<tr><td>33</td><td>A SHUT</td><td>I</td><td>Deck A Reel table signal input.</td></tr>
<tr><td>34</td><td>A70U</td><td>I</td><td>Deck A TYPE switch input. (Not used) (Open)</td></tr>
<tr><td>35</td><td>B STOP</td><td>I</td><td>Deck B STOP switch input.</td></tr>
</table>

Pin No.	Pin name	I/O	Description
36	B SHUT	I	Deck B Reel table signal input.
37	B70U	I	Deck B TYPE switch input. (Not used) (Open)
38	NC	–	Not used.
39	ARM 3	O	Deck A Reel Motor control out.
40	ARM 2	O	Deck A Reel Motor control out.
41	ARM 1	O	Deck A Reel Motor control out.
42	BRM 3	O	Deck B Reel Motor control out.
43	BRM 2	O	Deck B Reel Motor control out.
44	BRM 1	O	Deck B Reel Motor control out.
45	H/L	O	Capstan motor speed select.
46	A CM	O	A Capstan motor ON/OFF.
47	B CM	O	B Capstan motor ON/OFF.
48	BS/ASCH	I	Deck A Reel table/BS signal input.
49	A•P/BSCH	I	Deck B Reel table/A•P signal input.
50	A•REV	O	Deck A RVS LED output.
51	A•FWD	O	Deck A FWD LED output.
52	A PLAY	O	Deck B RVS/FWD LED control output. (Not used) (Open)
53	DUB H	O	High Speed Dubbing LED output.
54	DUB N	O	Normal Speed Dubbing LED output. (Not used) (Open)
55	NC	–	Not used.
56	CD SYNC	O	Auto CD Synchro LED output.
57	B•REV	O	Deck B RVS LED output.
58	B•FWD	O	Deck B FWD LED output.
59	B PLAY	O	Deck B RVS/FWD LED control output. (Not used) (Open)
60	B PAUSE	O	Deck B PAUSE LED output.
61	B•REC	O	Deck B REC LED output.
62	PASS	O	PASS amplifier switch output to Dolby IC. (IC401)
63	TEST	I	Electrical adjustment test mode setting.
64	NC	–	Not used.
65	Vss		GND
66	NC	–	Not used.
67	Vss		POWER 5 ± 0.5V.
68	AVss		Analog system GND.
69	VREF	I	Analog system reference voltage input.
70	DAC		GND
71	——		GND
72	——		GND

[TEST MODE]

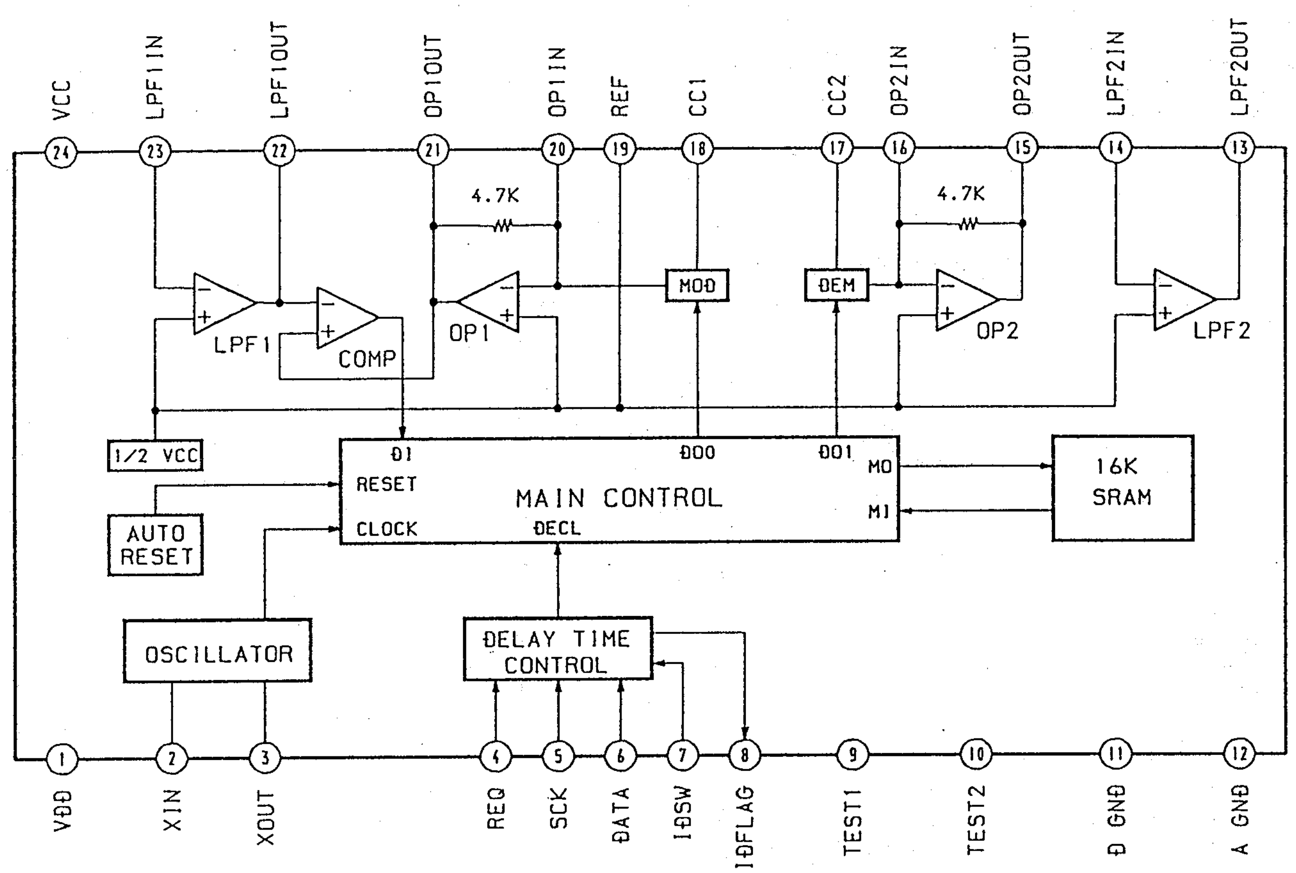
When making pin (63) low (connect TP1 to ground with jumper wire), following function operates.

Source monitor

release the line mute while recording

- **IC BLOCK DIAGRAM**

IC103 M65830AP (Service Manual See page 26)


VCC
LPF1IN
LPF1OUT
OP1OUT
OP1IN
REF
CC1
CC2
OP2IN
OP2OUT
LPF2IN
LPF2OUT
24
23
22
21
20
19
18
17
16
15
14
13
4.7K
4.7K
MOD
DEM
LPF1
COMP
OP1
OP2
LPF2
1/2 VCC
D1
RESET
CLOCK
DOO
DO1
MAIN CONTROL
DECL
MO
MI
16K SRAM
AUTO RESET
OSCILLATOR
DELAY TIME CONTROL
1
2
3
4
5
6
7
8
9
10
11
12
VDD
XIN
XOUT
REQ
SCK
DATA
IDSW
IDFLAG
TEST1
TEST2
D GND
A GND

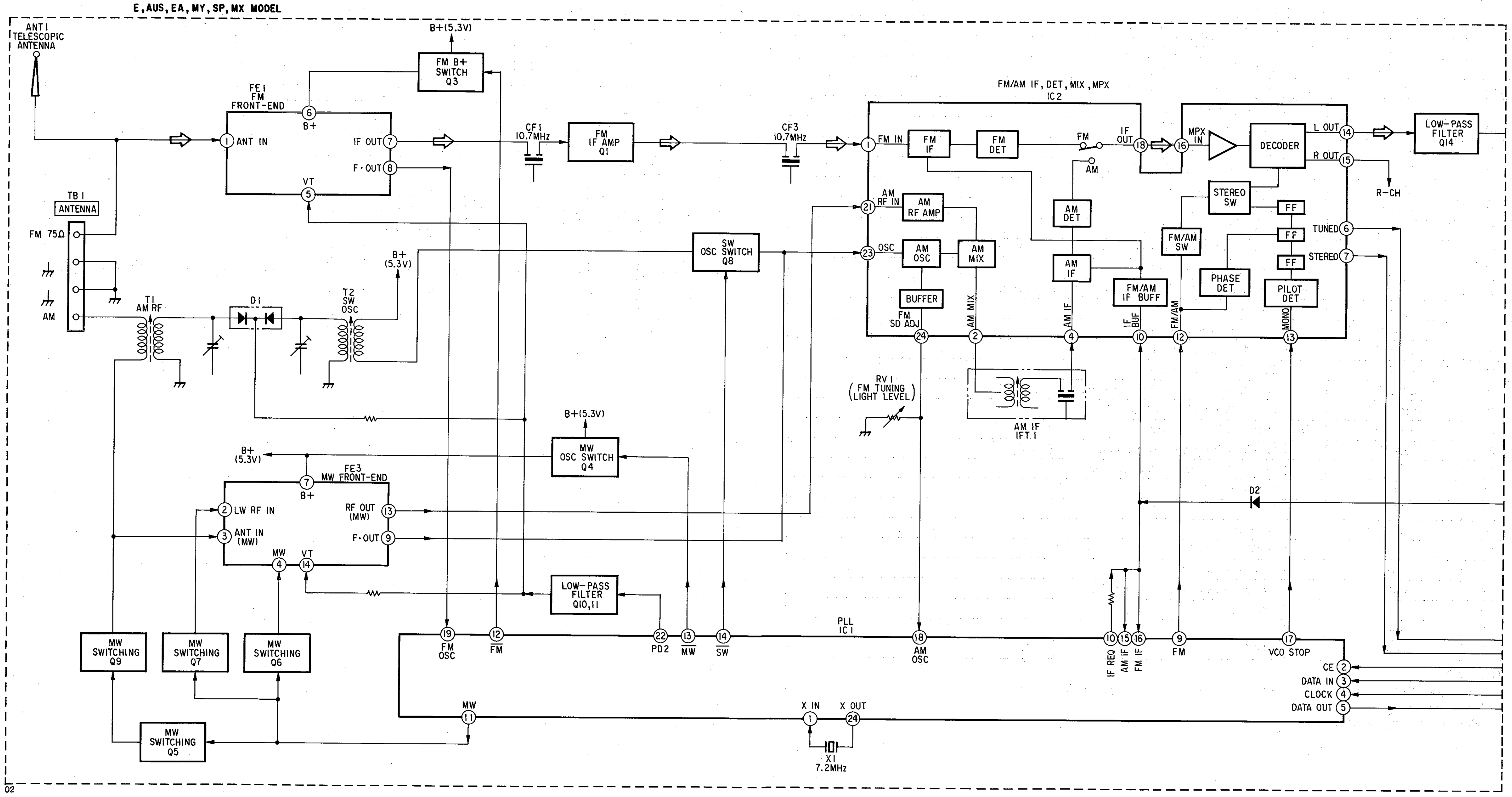
BLOCK DIAGRAMS (1)

- Abbreviations

CA	: Canadian	EA	: Saudi Arabia
AUS	: Australian	EE	: East European
G	: German	MY	: Malaysia
IT	: Italian	SP	: Singapore
MX	: Mexican		

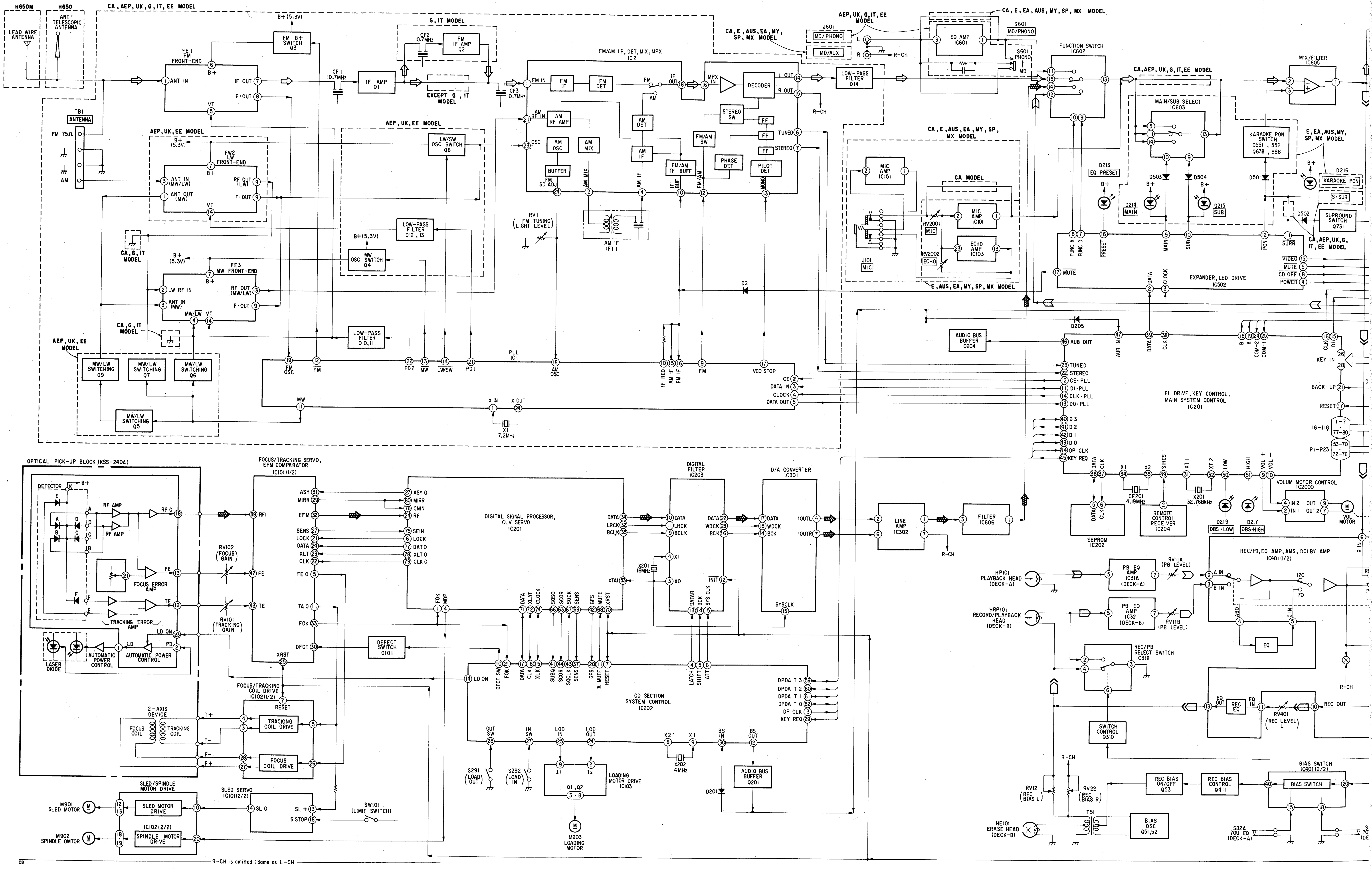
- Signal path.

⇨ : FM
⇨ : PB (DECK-A)
▭ : PB (DECK-B)
⇨ : REC (DECK-B)
⇨ : CD

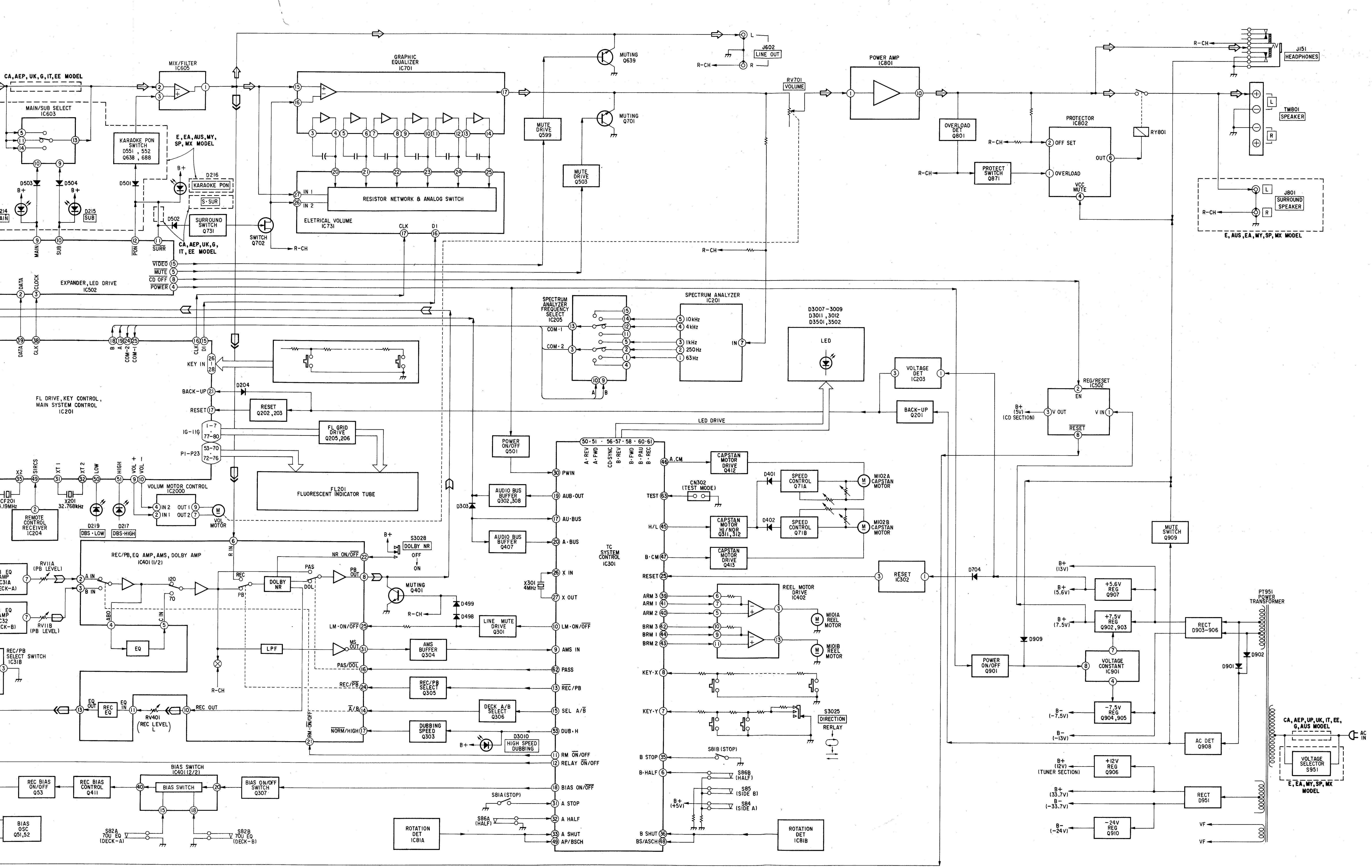

E, AUS, EA, MY, SP, MX MODEL
ANT1 TELESCOPIC ANTENNA
TB1 ANTENNA
FM 75Ω
AM
FE1 FM FRONT-END
ANT IN
B+
IF OUT
F·OUT
VT
FM B+ SWITCH Q3
B+(5.3V)
CF1 10.7MHz
FM IF AMP Q1
CF3 10.7MHz
T1 AM RF
D1
T2 SW OSC
B+ (5.3V)
SW OSC SWITCH Q8
MW OSC SWITCH Q4
FE3 MW FRONT-END
LW RF IN
ANT IN (MW)
RF OUT (MW)
F·OUT
MW
VT
LOW-PASS FILTER Q10,11
MW SWITCHING Q9
MW SWITCHING Q7
MW SWITCHING Q6
MW SWITCHING Q5
FM/AM IF, DET, MIX, MPX IC2
FM IN
FM IF
FM DET
FM
AM
IF OUT
MPX IN
DECODER
L OUT
R OUT
AM RF IN
AM RF AMP
AM DET
OSC
AM OSC
AM MIX
AM IF
BUFFER
FM/AM IF BUFF
STEREO SW
FM/AM SW
PHASE DET
PILOT DET
FF
TUNED
STEREO
FM SD ADJ
AM MIX
AM IF
IF BUF
FM/AM
MONO
LOW-PASS FILTER Q14
R-CH
RV1 (FM TUNING LIGHT LEVEL)
AM IF IFT1
D2
PLL IC1
FM OSC
FM
PD2
MW
SW
AM OSC
IF REQ
AM IF
FM IF
FM
VCO STOP
CE
DATA IN
CLOCK
DATA OUT
MW
X IN
X OUT
X1 7.2MHz

02

BLOCK DIAGRAMS (2)



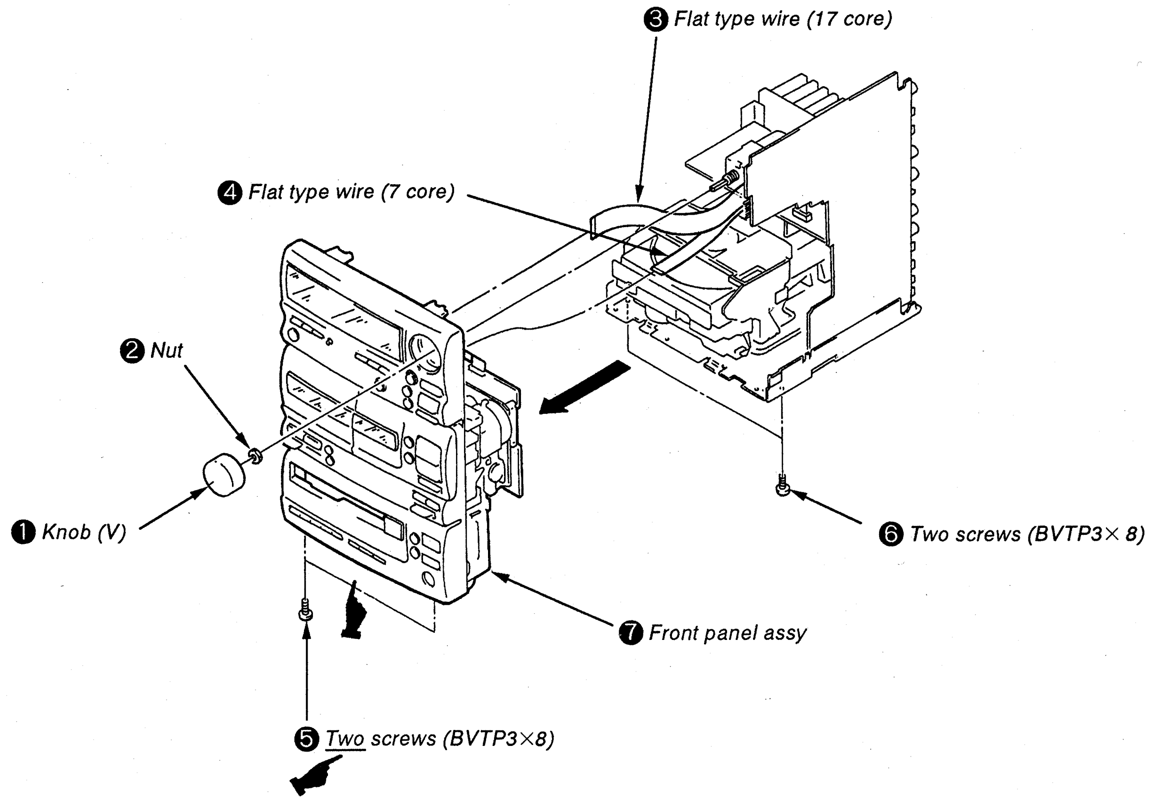
H650M
LEAD WIRE ANTENNA
H650
ANT1 TELESCOPIC ANTENNA
CA, AEP, UK, G, IT, EE MODEL
TB1 ANTENNA
FM 75Ω
AM
FE1 FM FRONT-END
ANT IN
IF OUT
F-OUT
VT
B+
B+(5.3V)
FM B+ SWITCH Q3
G, IT MODEL
CF2 10.7MHz
FM IF AMP Q2
EXCEPT G, IT MODEL
CF1 10.7MHz
IF AMP Q1
CF3 10.7MHz
AEP, UK, EE MODEL
FW2 LW FRONT-END
ANT IN (MW/LW)
ANT OUT (MW)
RF OUT (LW)
LW/SW OSC SWITCH Q8
LOW-PASS FILTER Q12, 13
MW OSC SWITCH Q4
CA, G, IT MODEL
FE3 MW FRONT-END
LW RF IN
RF OUT (MW/LW)
MW/LW
LOW-PASS FILTER Q10, 11
AEP, UK, EE MODEL
MW/LW SWITCHING Q9
MW/LW SWITCHING Q7
MW/LW SWITCHING Q6
MW/LW SWITCHING Q5
PLL IC1
FM OSC
FM
PD2
MW
LW/SW
PD1
AM OSC
IF REQ
AM IF
FM IF
VCO STOP
CE
DATA IN
CLOCK
DATA OUT
X IN
X OUT
X1 7.2MHz
FM/AM IF, DET, MIX, MPX IC2
FM IN
FM IF
FM DET
AM RF IN
AM RF AMP
OSC
AM OSC
AM MIX
BUFFER
FM SD ADJ
AM DET
AM IF
FM/AM IF BUFF
FM/AM SW
IF OUT
MPX IN
DECODER
L OUT
R OUT
STEREO SW
FF
PHASE DET
PILOT DET
TUNED
STEREO
MONO
RV1 FM TUNING (LIGHT LEVEL)
AM IF IFT1
LOW-PASS FILTER Q14
R-CH
D2
CA, E, AUS, EA, MY, SP, MX MODEL
AEP, UK, G, IT, EE MODEL
J601 MD/PHONO
MD/AUX
EQ AMP IC601
S601 MD/PHONO
S601 PHONO MD
FUNCTION SWITCH IC602
CA, E, EA, AUS, MY, SP, MX MODEL
MIC AMP IC151
CA MODEL
MIC AMP IC101
RV2001 MIC
RV2002 ECHO
ECHO AMP IC103
J101 MIC
E, AUS, EA, MY, SP, MX MODEL
CA, AEP, UK, G, IT, EE MODEL
MAIN/SUB SELECT IC603
D213 EQ PRESET
D503
D504
D214 MAIN
D215 SUB
MIX/FILTER IC605
KARAOKE PON SWITCH D551, 552 Q638, 688
E, EA, AUS, MY, SP, MX MODEL
D501
D216 KARAOKE PON
S-SUR
D502
SURROUND SWITCH Q731
CA, AEP, UK, G, IT, EE MODEL
FUNC A
FUNC D
PRESET
MAIN
SUB
PON
SURR
MUTE
VIDEO
MUTE
CD OFF
POWER
EXPANDER, LED DRIVE IC502
DATA
CLOCK
D205
AUDIO BUS BUFFER Q204
AUB OUT
AUB IN
CLK
COM-1
COM-2
KEY IN
TUNED
STEREO
CE-PLL
DI-PLL
CLK-PLL
DO-PLL
FL DRIVE, KEY CONTROL, MAIN SYSTEM CONTROL IC201
BACK-UP
RESET
IG-11G
P1-P23
D3
D2
D1
D0
DP CLK
KEY REQ
X1
X2
SIRCS
XT1
XT2
LOW
HIGH
VOL+
VOL-
CF201 4.19MHz
X201 32.768kHz
REMOTE CONTROL RECEIVER IC204
EEPROM IC202
D219 DBS-LOW
D217 DBS-HIGH
VOLUM MOTOR CONTROL IC2000
IN2
IN1
OUT1
OUT2
VOL MOTOR
OPTICAL PICK-UP BLOCK (KSS-240A)
DETECTOR
RF AMP
RF O
FOCUS ERROR AMP
FE
TE
TRACKING ERROR AMP
LD ON
PD
LD
LASER DIODE
AUTOMATIC POWER CONTROL
RV102 (FOCUS GAIN)
RV101 (TRACKING GAIN)
FOCUS/TRACKING SERVO, EFM COMPARATOR IC101 (1/2)
RFI
ASY
MIRR
EFM
SENS
LOCK
DATA
XLT
CLK
FE O
TA O
FOK
DFCT
XRST
DEFECT SWITCH Q101
ASY O
MIRR
CNIN
RF
SEIN
LOCK
DAT O
XLT O
CLK O
DIGITAL SIGNAL PROCESSOR, CLV SERVO IC201
DATA
LRCK
BCLK
XTAI
X201 16MHz
FOK
MDP
CLOCK
SQSO
SCOR
SQCK
SENS
GFS
MUTE
DIGITAL FILTER IC203
WDCK
BCK
XI
XO
INIT
DATAR
SYS CLK
D/A CONVERTER IC301
IOUTL
IOUTR
SYSCLK
LINE AMP IC302
FILTER IC606
FOCUS/TRACKING COIL DRIVE IC102 (1/2)
RESET
2-AXIS DEVICE
FOCUS COIL
TRACKING COIL
TRACKING COIL DRIVE
FOCUS COIL DRIVE
LD ON
DFCT SW
FOK
DATA
CLK
XLK
SUBQ
SCOR
SQCLK
SENS
GFS
A MUTE
RESET
CD SECTION SYSTEM CONTROL IC202
LATCH
SHIFT
ATT
DPDA T3
DPDA T2
DPDA T1
DPDA T0
DP CLK
KEY REQ
OUT SW
IN SW
LOD IN
LOD OUT
X2
X1
BS IN
BS OUT
S291 (LOAD OUT)
S292 (LOAD IN)
Q1, Q2
LOADING MOTOR DRIVE IC103
M903 LOADING MOTOR
X202 4MHz
AUDIO BUS BUFFER Q201
D201
SLED/SPINDLE MOTOR DRIVE
SLED MOTOR DRIVE
IC102 (2/2)
SPINDLE MOTOR DRIVE
M901 SLED MOTOR
M902 SPINDLE OMTOR
SLED SERVO IC101 (2/2)
SL O
SL+
S STOP
SW101 (LIMIT SWITCH)
R-CH is omitted : Same as L-CH
REC/PB, EQ AMP, AMS, DOLBY AMP IC401 (1/2)
HP101 PLAYBACK HEAD (DECK-A)
PB EQ AMP IC31A (DECK-A)
RV11A (PB LEVEL)
HRP101 RECORD/PLAYBACK HEAD (DECK-B)
PB EQ AMP IC32 (DECK-B)
RV11B (PB LEVEL)
A IN
B IN
ABO
C IN
EQ
REC/PB SELECT SWITCH IC31B
SWITCH CONTROL Q310
EQ OUT
REC EQ
EQ IN
RV401 (REC LEVEL)
REC OUT
R-CH
RV12 (REC BIAS L)
RV22 (REC BIAS R)
REC BIAS ON/OFF Q53
REC BIAS CONTROL Q411
BIAS SWITCH IC401 (2/2)
BIAS SWITCH
HE101 ERASE HEAD (DECK-B)
T51
BIAS OSC Q51, 52
S82A 70U EQ (DECK-A)
R IN


CA,AEP,UK,G,IT,EE MODEL
MIX/FILTER IC605
MAIN/SUB SELECT IC603
KARAOKE PON SWITCH D551 , 552 Q638 , 688
E,EA,AUS,MY, SP,MX MODEL
D216 KARAOKE PON
S-SUR
SURROUND SWITCH Q731
CA,AEP,UK,G, IT,EE MODEL
D503
D504
D501
D502
D215 SUB
MAIN
SUB
PON
SURR
VIDEO
MUTE
CD OFF
POWER
EXPANDER,LED DRIVE IC502
DATA
CLOCK
GRAPHIC EQUALIZER IC701
RESISTOR NETWORK & ANALOG SWITCH
ELETRICAL VOLUME IC731
IN 1
IN 2
CLK
DI
SWITCH Q702
R-CH
MUTING Q639
MUTING Q701
MUTE DRIVE Q599
MUTE DRIVE Q503
J602 LINE OUT
L
R
RV701 VOLUME
POWER AMP IC801
OVERLOAD DET Q801
PROTECT SWITCH Q871
PROTECTOR IC802
OFF SET
OVERLOAD
OUT
VCC MUTE
RY801
J151 HEADPHONES
TM801 SPEAKER
J801 SURROUND SPEAKER
E,AUS,EA,MY,SP,MX MODEL
SPECTRUM ANALYZER FREQUENCY SELECT IC205
COM·1
COM·2
SPECTRUM ANALYZER IC201
10kHz
4kHz
1kHz
250Hz
63Hz
IN
D3007-3009 D3011 ,3012 D3501 ,3502
LED
VOLTAGE DET IC203
BACK-UP Q201
REG/RESET IC502
EN
V OUT
V IN
RESET
B+ (5V) (CD SECTION)
LED DRIVE
KEY IN
BACK-UP
D204
RESET
RESET Q202 ,203
IG-I16
P1-P23
FL GRID DRIVE Q205 ,206
FL201 FLUORESCENT INDICATOR TUBE
FL DRIVE,KEY CONTROL, MAIN SYSTEM CONTROL IC201
X2
SIRCS
XT 1
XT 2
LOW
HIGH
VOL +
VOL −
CF201 4.19MHz
X201 32.768kHz
REMOTE CONTROL RECEIVER IC204
D219 DBS·LOW
D217 DBS·HIGH
VOLUM MOTOR CONTROL IC2000
VOL MOTOR
REC/PB,EQ AMP,AMS,DOLBY AMP IC401 (1/2)
RV11A (PB LEVEL)
RV11B (PB LEVEL)
A IN
B IN
EQ
DOLBY NR
LPF
S3028 DOLBY NR
OFF
ON
MUTING Q401
D499
D498
LINE MUTE DRIVE Q301
AMS BUFFER Q304
REC/PB SELECT Q305
DECK A/B SELECT Q306
DUBBING SPEED Q303
D3010 HIGH SPEED DUBBING
REC/PB SELECT SWITCH IC318
REC EQ
RV401 (REC LEVEL)
REC OUT
BIAS SWITCH IC401 (2/2)
REC BIAS ON/OFF Q53
REC BIAS CONTROL Q411
BIAS ON/OFF SWITCH Q307
BIAS OSC Q51,52
S82A 70U EQ (DECK-A)
S82B 70U EQ (DECK-B)
S81A (STOP)
S86A (HALF)
ROTATION DET IC81A
ROTATION DET IC81B
POWER ON/OFF Q501
AUDIO BUS BUFFER Q302,308
AUDIO BUS BUFFER Q407
D303
TC SYSTEM CONTROL IC301
X301 4MHz
PWIN
AUB·OUT
AU·BUS
A·BUS
X IN
X OUT
LM·ON/OFF
AMS IN
PASS
REC/PB
SEL A/B
DUB·H
RM ON/OFF
RELAY ON/OFF
BIAS ON/OFF
A STOP
A HALF
A SHUT
AP/BSCH
A·REV
A·FWD
CD·SYNC
B·REV
B·FWD
B·PAU
B·REC
A.CM
TEST
H/L
B·CM
RESET
ARM 3
ARM 1
ARM 2
BRM 3
BRM 1
BRM 2
KEY·X
KEY·Y
B STOP
B·HALF
B SHUT
BS/ASCH
CN302 (TEST MODE)
CAPSTAN MOTOR DRIVE Q412
CAPSTAN MOTOR HI/NOR Q311,312
CAPSTAN MOTOR DRIVE Q413
SPEED CONTROL Q71A
SPEED CONTROL Q71B
D401
D402
M102A CAPSTAN MOTOR
M102B CAPSTAN MOTOR
REEL MOTOR DRIVE IC402
M101A REEL MOTOR
M101B REEL MOTOR
S3025 DIRECTION
RERLAY
S81B (STOP)
S86B (HALF)
S85 (SIDE B)
S84 (SIDE A)
B+ (+5V)
RESET IC302
D704
MUTE SWITCH Q909
D909
POWER ON/OFF Q901
+5.6V REG Q907
+7.5V REG Q902,903
VOLTAGE CONSTANT IC901
−7.5V REG Q904,905
B+ (13V)
B+ (5.6V)
B+ (7.5V)
B− (−7.5V)
B− (−13V)
RECT D903-906
D902
D901
AC DET Q908
PT951 POWER TRANSFORMER
CA,AEP,UP,UK,IT,EE, G,AUS MODEL
VOLTAGE SELECTOR S951
E,EA,MY,SP,MX MODEL
AC IN
+12V REG Q906
B+ (12V) (TUNER SECTION)
RECT D951
B+ (33.7V)
B− (−33.7V)
−24V REG Q910
B− (−24V)
VF

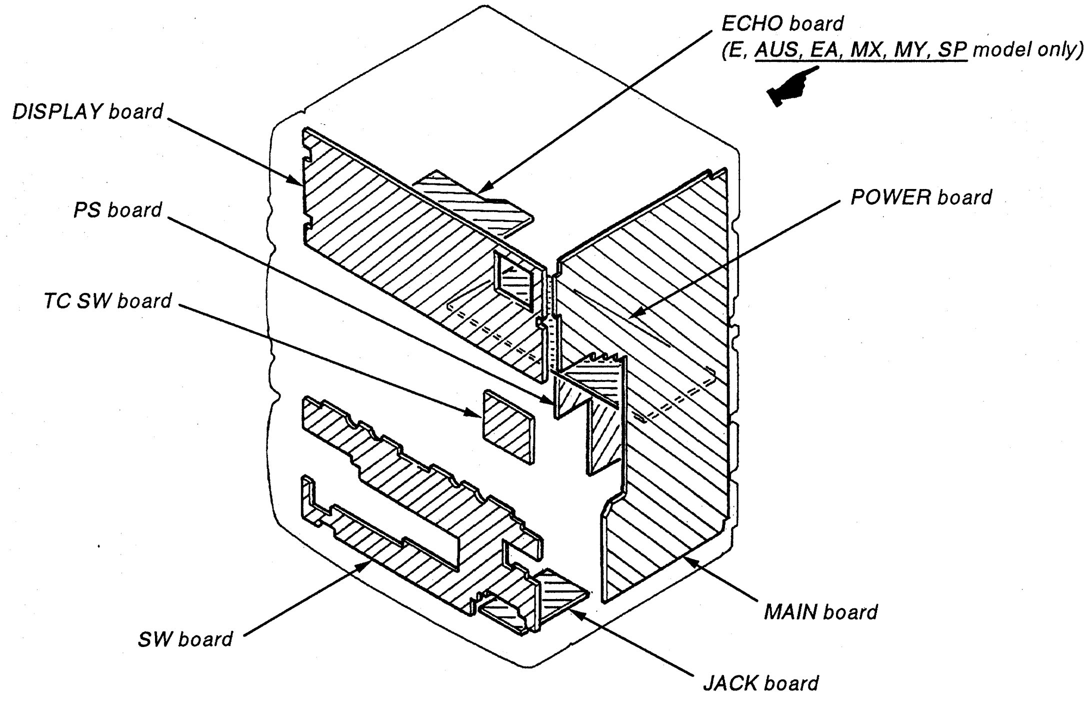
CORRECTION

☛ : corrected portion

2-3. FRONT PANEL REMOVAL (Service Manual See page 6)

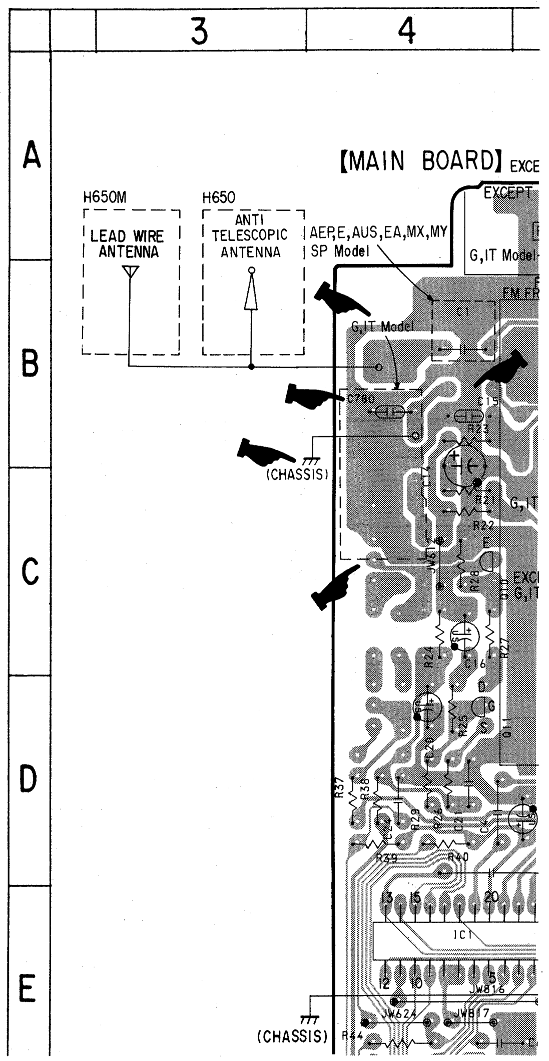

❸ Flat type wire (17 core)
❹ Flat type wire (7 core)
❷ Nut
❶ Knob (V)
❻ Two screws (BVTP3× 8)
❼ Front panel assy
❺ Two screws (BVTP3×8)

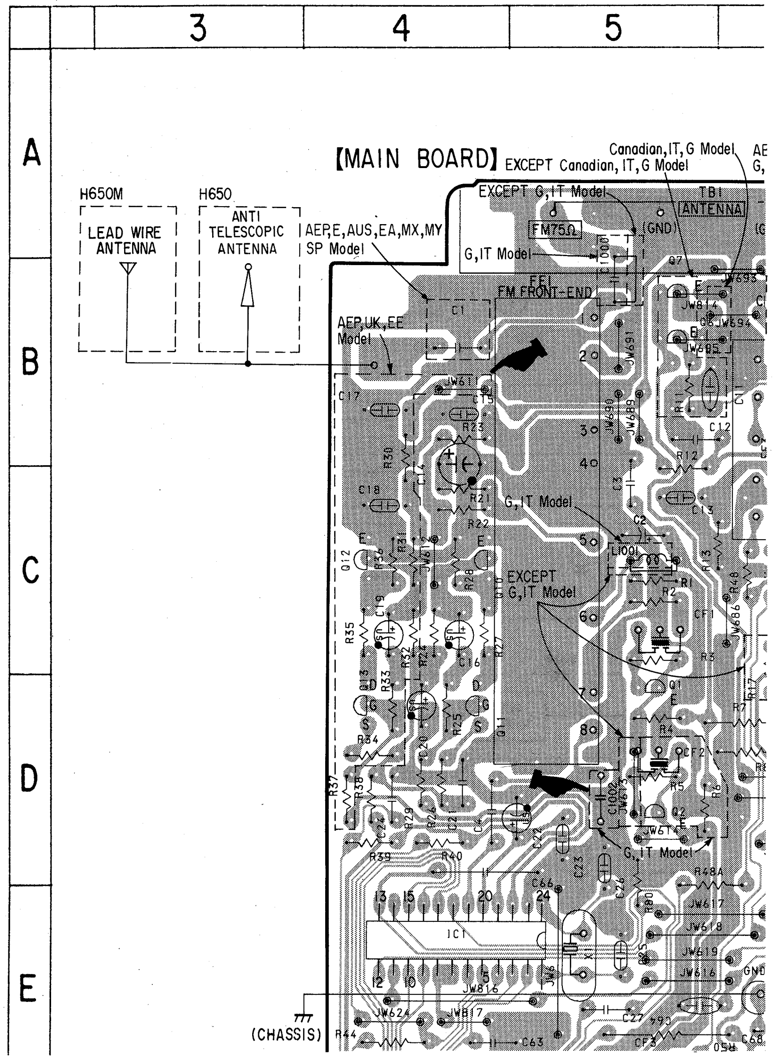
4-1. CIRCUIT BOARD LOCATION (Service Manual See page 15)


ECHO board
(E, AUS, EA, MX, MY, SP model only)
DISPLAY board
PS board
TC SW board
POWER board
SW board
MAIN board
JACK board

☛ : corrected portion

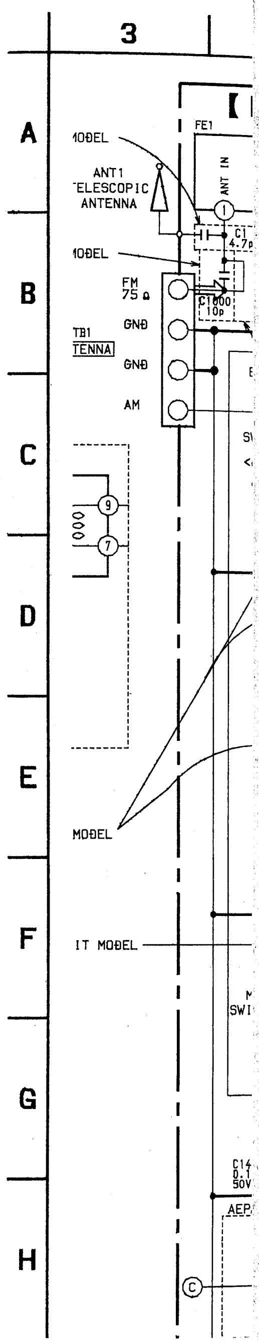
• PRINTED WIRING BOARDS – MAIN SECTION – (Service Manual See page 17)


3
4
A
B
C
D
E
[MAIN BOARD]
H650M
H650
LEAD WIRE ANTENNA
ANTI TELESCOPIC ANTENNA
AEP,E,AUS,EA,MX,MY SP Model
G,IT Model
EXCEPT
FM FR
C1
C760
(CHASSIS)
R23
R21
R22
IC1
(CHASSIS)


3
4
5
A
B
C
D
E
[MAIN BOARD] EXCEPT Canadian, IT, G Model
Canadian, IT, G Model
EXCEPT G, IT Model
TB1
ANTENNA
FM75Ω
GND
H650M
H650
LEAD WIRE ANTENNA
ANTI TELESCOPIC ANTENNA
AEP,E,AUS,EA,MX,MY SP Model
G,IT Model
FE1
FM FRONT-END
AEP,UK,EE Model
C1
G,IT Model
EXCEPT G,IT Model
IC1
G,IT Model
(CHASSIS)

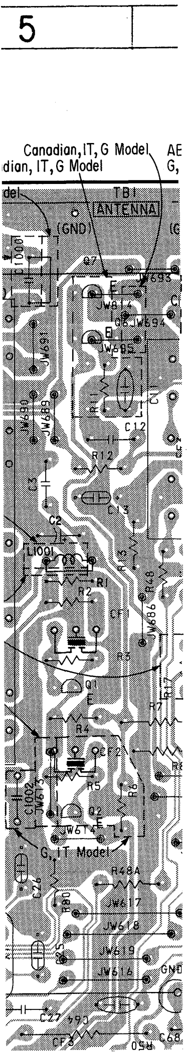
☛ : corrected port

• SCHEMATIC DIAGR

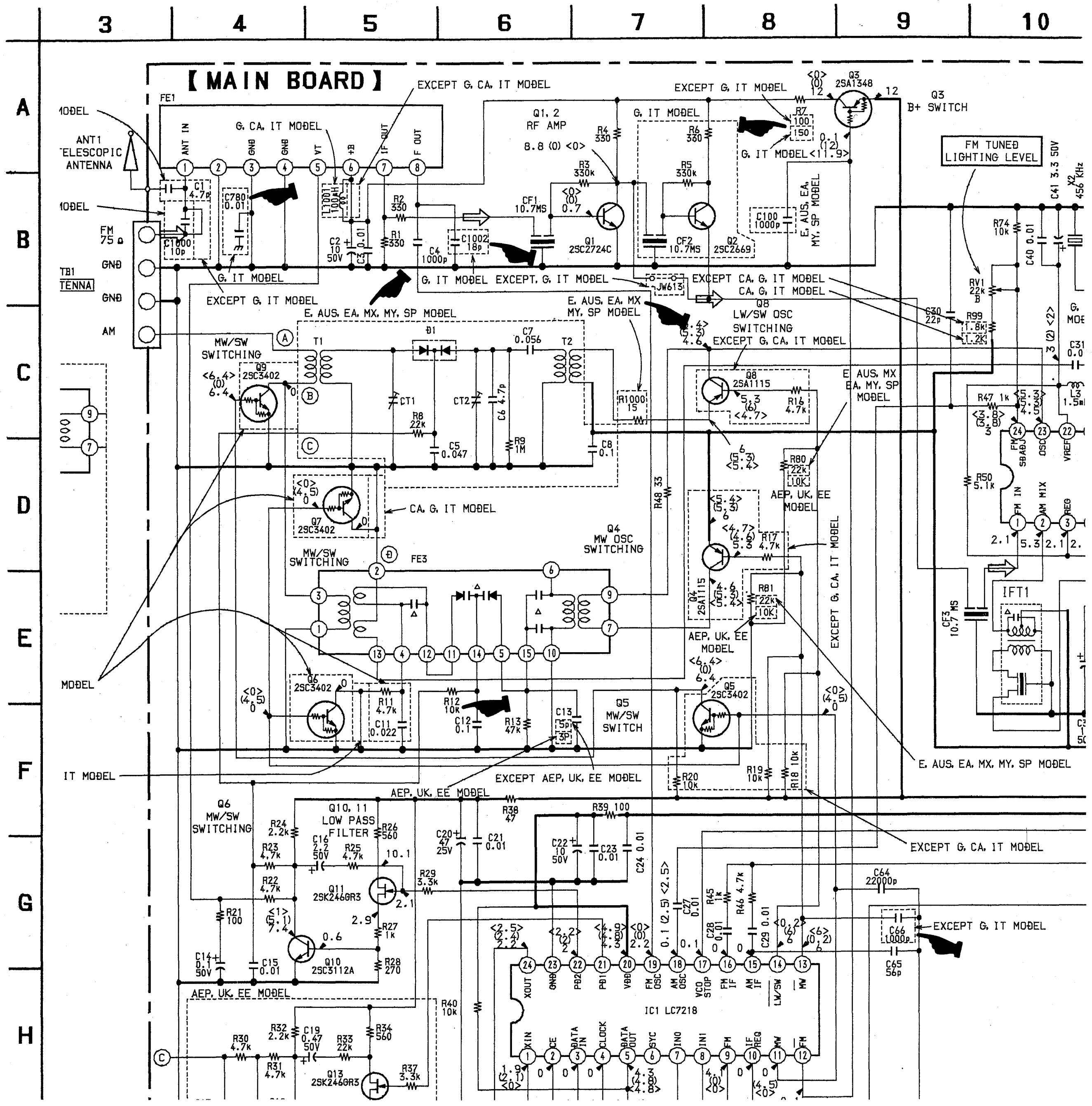

3
A
B
C
D
E
F
G
H
FE1
ANT1
TELESCOPIC ANTENNA
FM 75 Ω
GND
GND
AM
TB1
TENNA
MODEL
IT MODEL

: corrected portion

• SCHEMATIC DIAGRAM – MAIN SECTION – (Service Manual See page 19, 20)



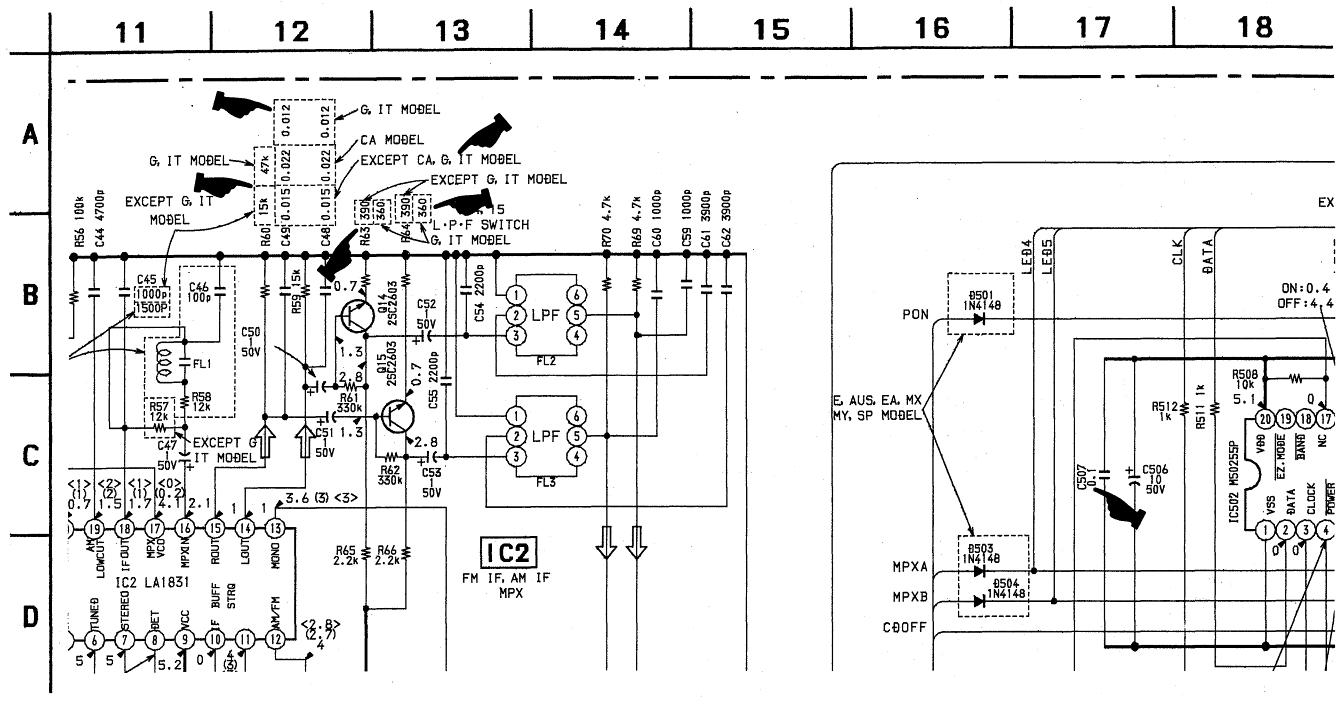
5
Canadian, IT, G Model
dian, IT, G Model
TB1
ANTENNA
GND
G, IT Model



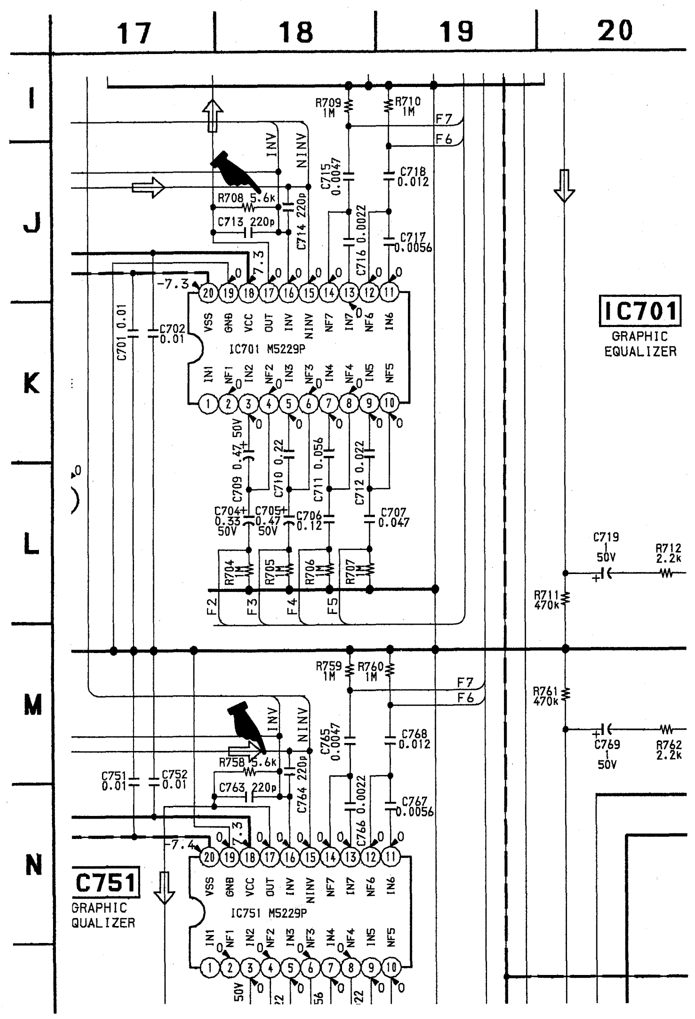
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
[MAIN BOARD]
ANT1 TELESCOPIC ANTENNA
FM 75Ω
TB1 ANTENNA
EXCEPT G, CA, IT MODEL
G, CA, IT MODEL
Q1, 2 RF AMP
G, IT MODEL
Q3 B+ SWITCH
FM TUNED LIGHTING LEVEL
E, AUS, EA, MX, MY, SP MODEL
MW/SW SWITCHING
LW/SW OSC SWITCHING
CA, G, IT MODEL
Q4 MW OSC SWITCHING
Q5 MW/SW SWITCH
Q6 MW/SW SWITCHING
Q10, 11 LOW PASS FILTER
AEP, UK, EE MODEL
EXCEPT AEP, UK, EE MODEL
IC1 LC7218
IFT1
IT MODEL
MODEL

: corrected portion

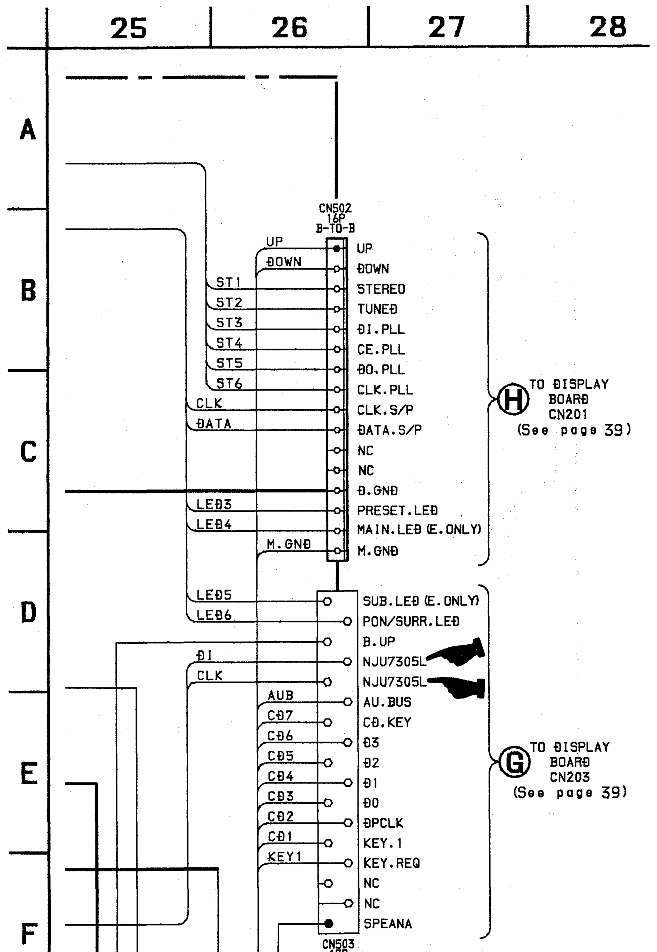
• SCHEMATIC DIAGRAM – MAIN SECTION – (Service Manual See page 20 – 22)



11
12
13
14
15
16
17
18
A
B
C
D
G, IT MODEL
CA MODEL
EXCEPT CA, G, IT MODEL
EXCEPT G, IT MODEL
L·P·F SWITCH
LPF
FL1
FL2
FL3
IC2
FM IF, AM IF MPX
IC2 LA1831
PON
E, AUS, EA, MX, MY, SP MODEL
MPXA
MPXB
CBOFF
IC502 M50255P



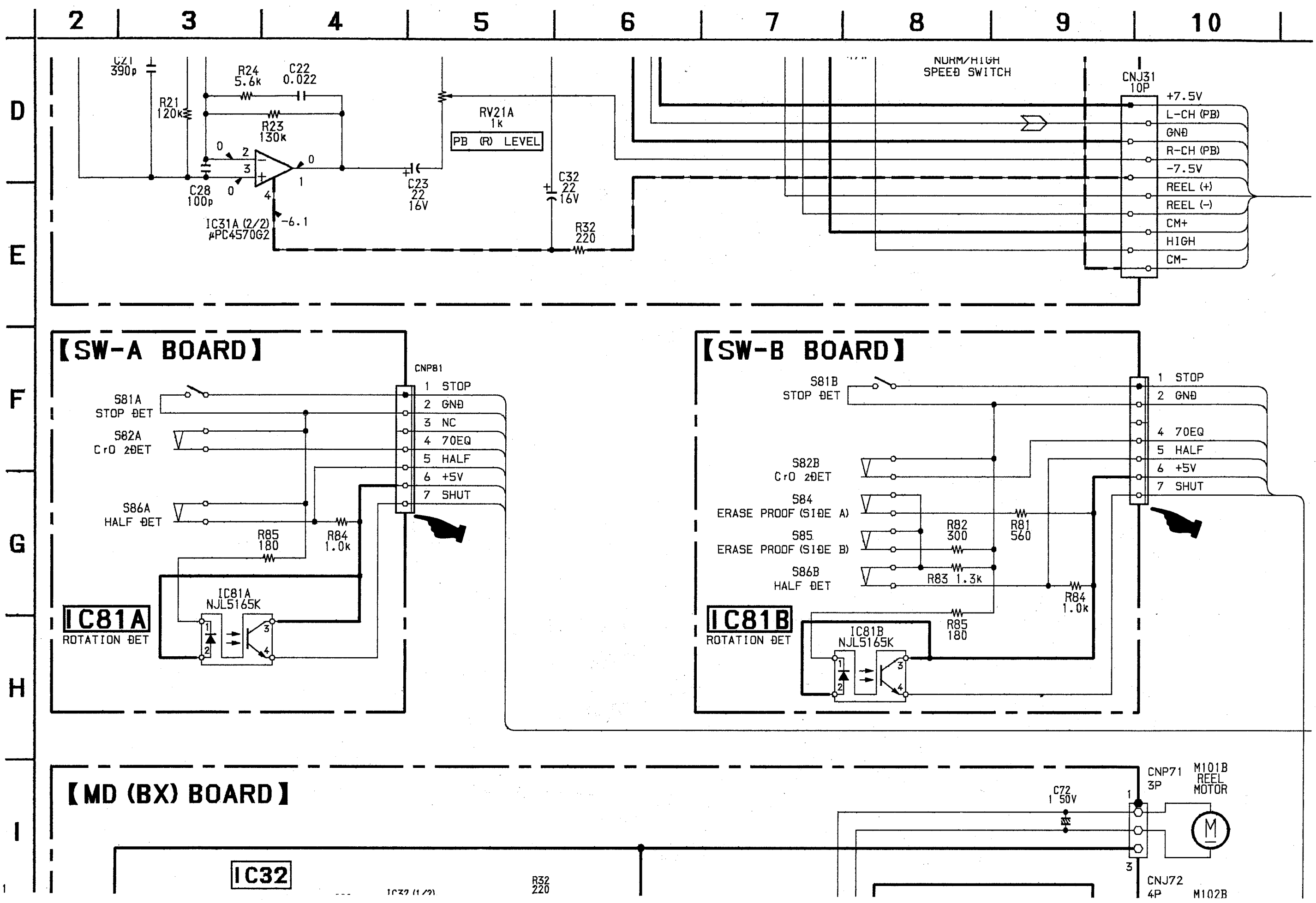
17
18
19
20
I
J
K
L
M
N
IC701
GRAPHIC EQUALIZER
IC701 M5229P
C751
GRAPHIC QUALIZER
IC751 M5229P



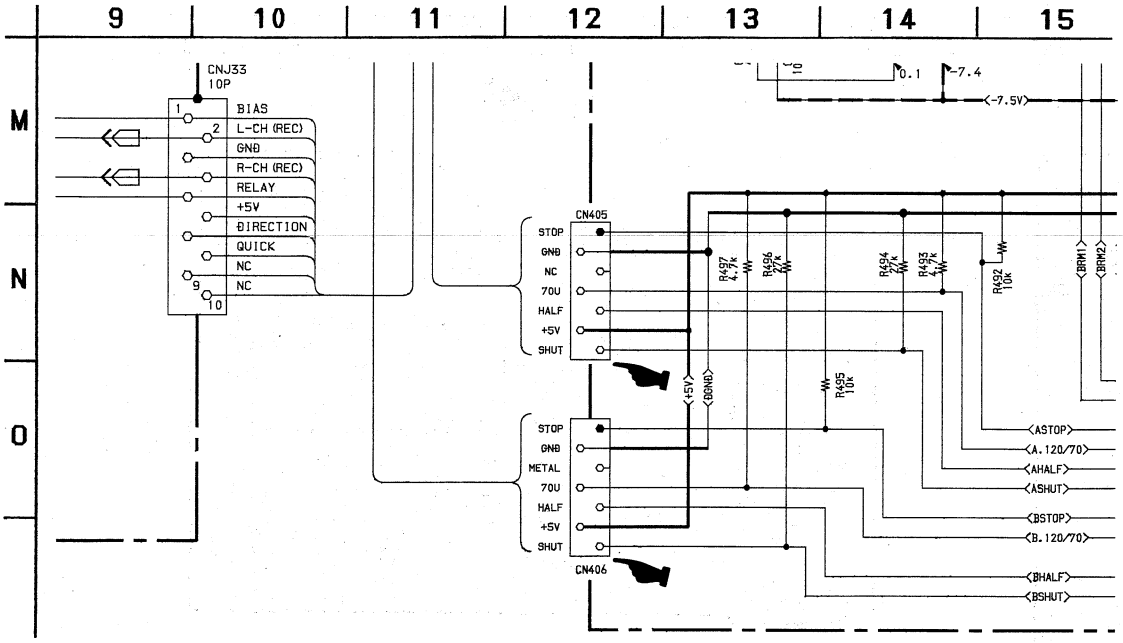
25
26
27
28
A
B
C
D
E
F
CN502 16P B-TO-B
UP
DOWN
STEREO
TUNED
DI.PLL
CE.PLL
DO.PLL
CLK.PLL
CLK.S/P
DATA.S/P
NC
D.GND
PRESET.LED
MAIN.LED (E.ONLY)
M.GND
TO DISPLAY BOARD CN201 (See page 39)
SUB.LED (E.ONLY)
PON/SURR.LED
B.UP
NJU7305L
AU.BUS
CD.KEY
KEY.1
KEY.REQ
SPEANA
CN503 17P FFC
TO DISPLAY BOARD CN203 (See page 39)

: corrected portion

● SCHEMATIC DIAGRAM – DECK SECTION – (Service Manual See page 24, 25)



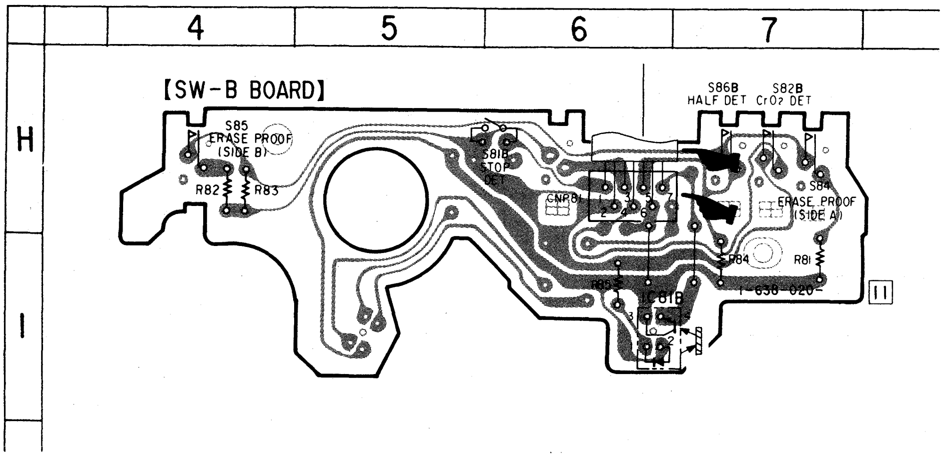
2
3
4
5
6
7
8
9
10
D
E
F
G
H
I
C21 390p
R24 5.6k
C22 0.022
R21 120k
R23 130k
C28 100p
IC31A (2/2) µPC4570G2
-6.1
RV21A 1k
PB (R) LEVEL
C23 22 16V
C32 22 16V
R32 220
NORM/HIGH SPEED SWITCH
CNJ31 10P
+7.5V
L-CH (PB)
GND
R-CH (PB)
-7.5V
REEL (+)
REEL (-)
CM+
HIGH
CM-
【SW-A BOARD】
CNP81
1 STOP
2 GND
3 NC
4 70EQ
5 HALF
6 +5V
7 SHUT
S81A STOP DET
S82A CrO2 DET
S86A HALF DET
R85 180
R84 1.0k
IC81A
IC81A NJL5165K
ROTATION DET
【SW-B BOARD】
S81B STOP DET
S82B CrO2 DET
S84 ERASE PROOF (SIDE A)
S85 ERASE PROOF (SIDE B)
S86B HALF DET
R82 300
R81 560
R83 1.3k
R84 1.0k
R85 180
IC81B
IC81B NJL5165K
ROTATION DET
1 STOP
2 GND
4 70EQ
5 HALF
6 +5V
7 SHUT
【MD (BX) BOARD】
IC32
R32 220
C72 1 50V
CNP71 3P
M101B REEL MOTOR
CNJ72 4P
M102B

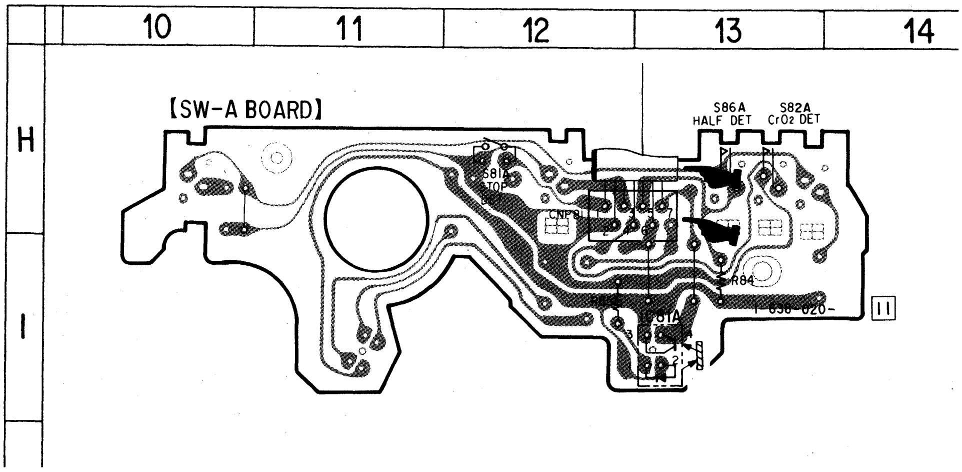


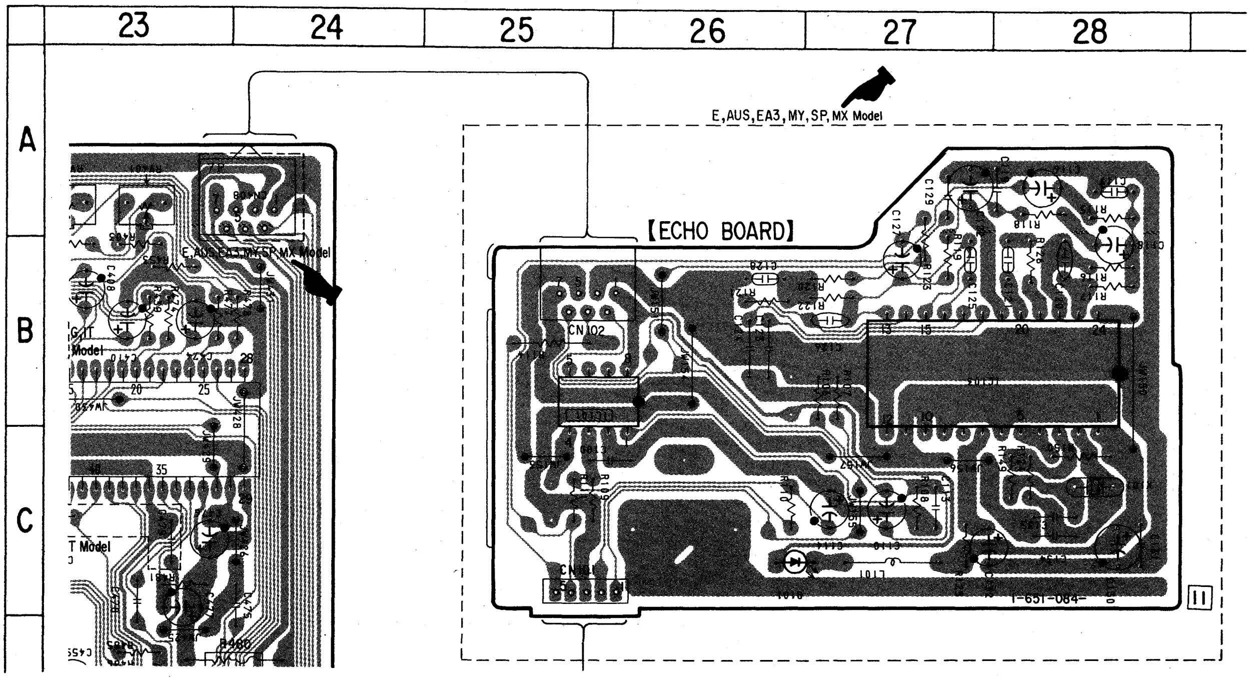
9
10
11
12
13
14
15
M
N
O
CNJ33 10P
BIAS
L-CH (REC)
GND
R-CH (REC)
RELAY
+5V
DIRECTION
QUICK
NC
NC
0.1
-7.4
-7.5V
CN405
STOP
GND
NC
70U
HALF
+5V
SHUT
R497 4.7k
R496 47k
R494 27k
R493 4.7k
R492 10k
BRM1
BRM2
+5V
DGND
R495 10k
STOP
GND
METAL
70U
HALF
+5V
SHUT
CN406
ASTOP
A.120/70
AHALF
ASHUT
BSTOP
B.120/70
BHALF
BSHUT

: corrected portion

• PRINTED WIRING BOARDS – DECK SECTION – (Service Manual See page 29 – 32)

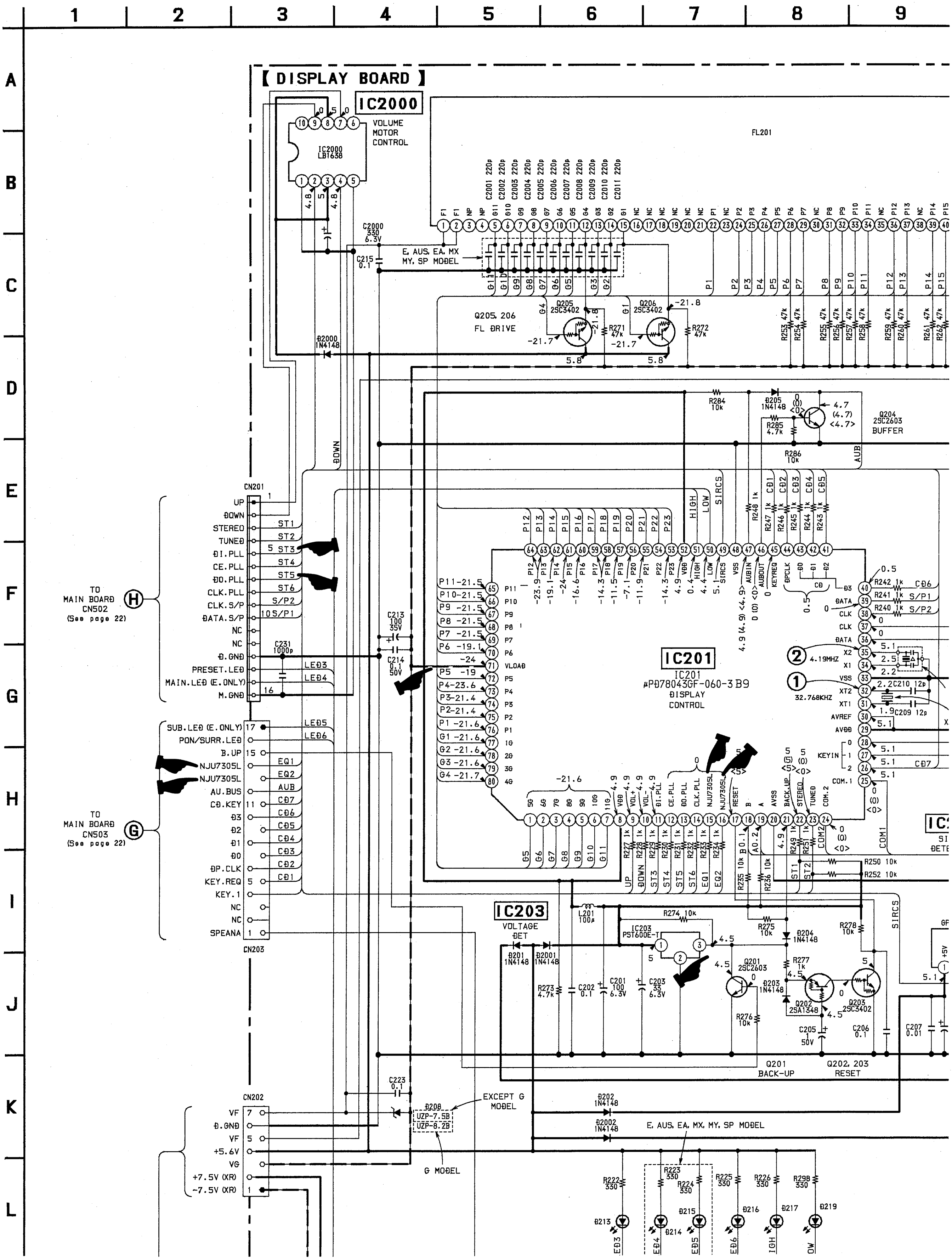

4
5
6
7
H
I
[SW-B BOARD]
S85
ERASE PROOF
(SIDE B)
R82
R83
S81B
STOP
DET
CNP81
S86B
HALF DET
S82B
CrO2 DET
S84
ERASE PROOF
(SIDE A)
R84
R81
R85
IC81B
1-638-020-
11


10
11
12
13
14
H
I
[SW-A BOARD]
S81A
STOP
DET
CNP81
S86A
HALF DET
S82A
CrO2 DET
R84
R85
IC81A
1-638-020-
11


23
24
25
26
27
28
A
B
C
E,AUS,EA3,MY,SP,MX Model
E,AUS,EA3,MY,SP,MX Model
[ECHO BOARD]
CN102
CN101
IC101
1-651-084-
11

: corrected portion

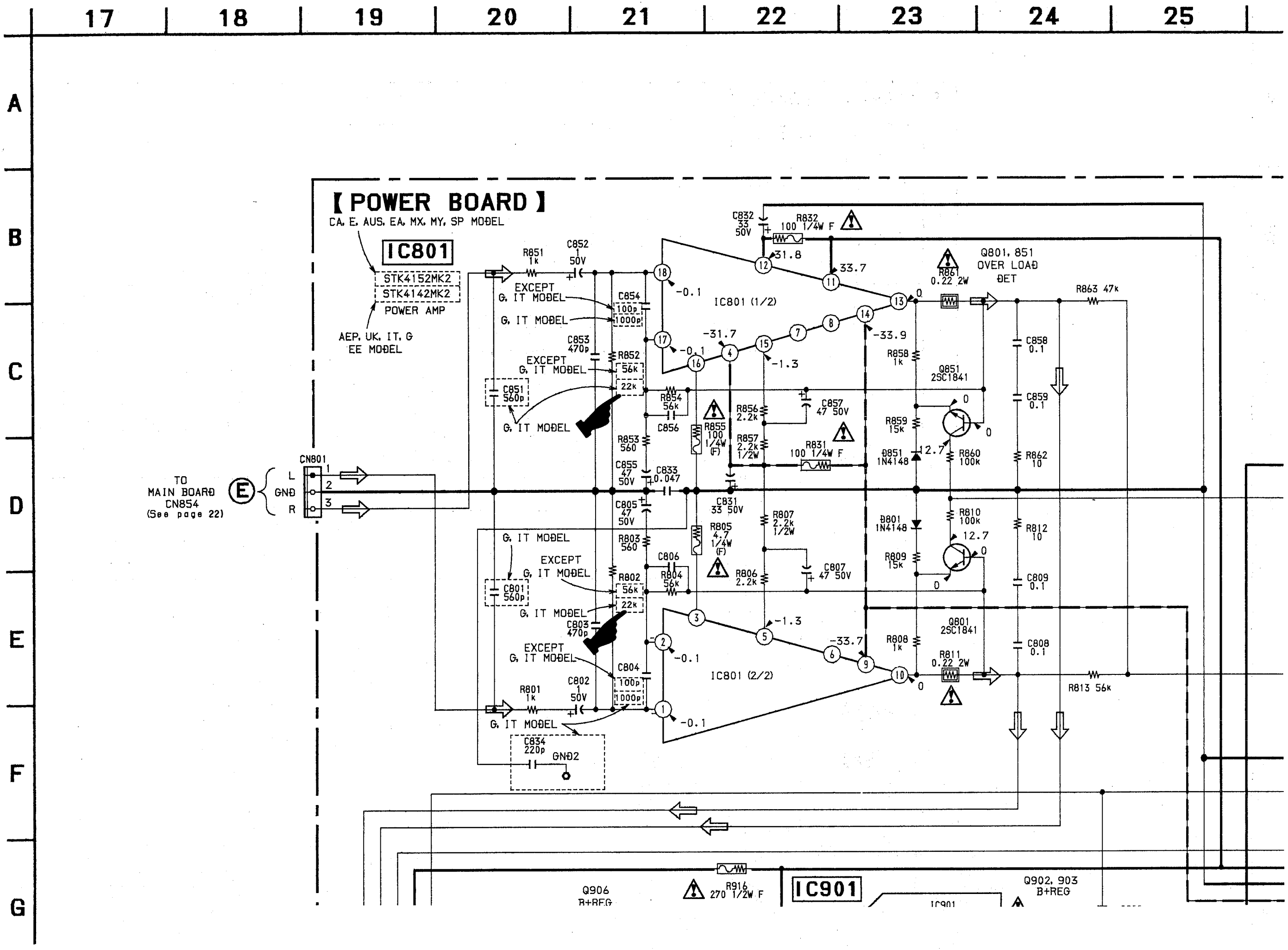
• SCHEMATIC DIAGRAM – DISPLAY SECTION – (Service Manual See page 39)



[DISPLAY BOARD]
IC2000
VOLUME MOTOR CONTROL
IC2000 LB1638
FL201
IC201
IC201 μPD78043GF-060-3B9
DISPLAY CONTROL
IC203
VOLTAGE DET
IC203 PST600E-T
Q205, 206 FL DRIVE
Q204 2SC2603 BUFFER
Q201 BACK-UP
Q202, 203 RESET
TO MAIN BOARD CN502 (See page 22)
TO MAIN BOARD CN503 (See page 22)
CN201
CN202
CN203
E, AUS, EA, MX, MY, SP MODEL
EXCEPT G MODEL
G MODEL

☛ : corrected portion

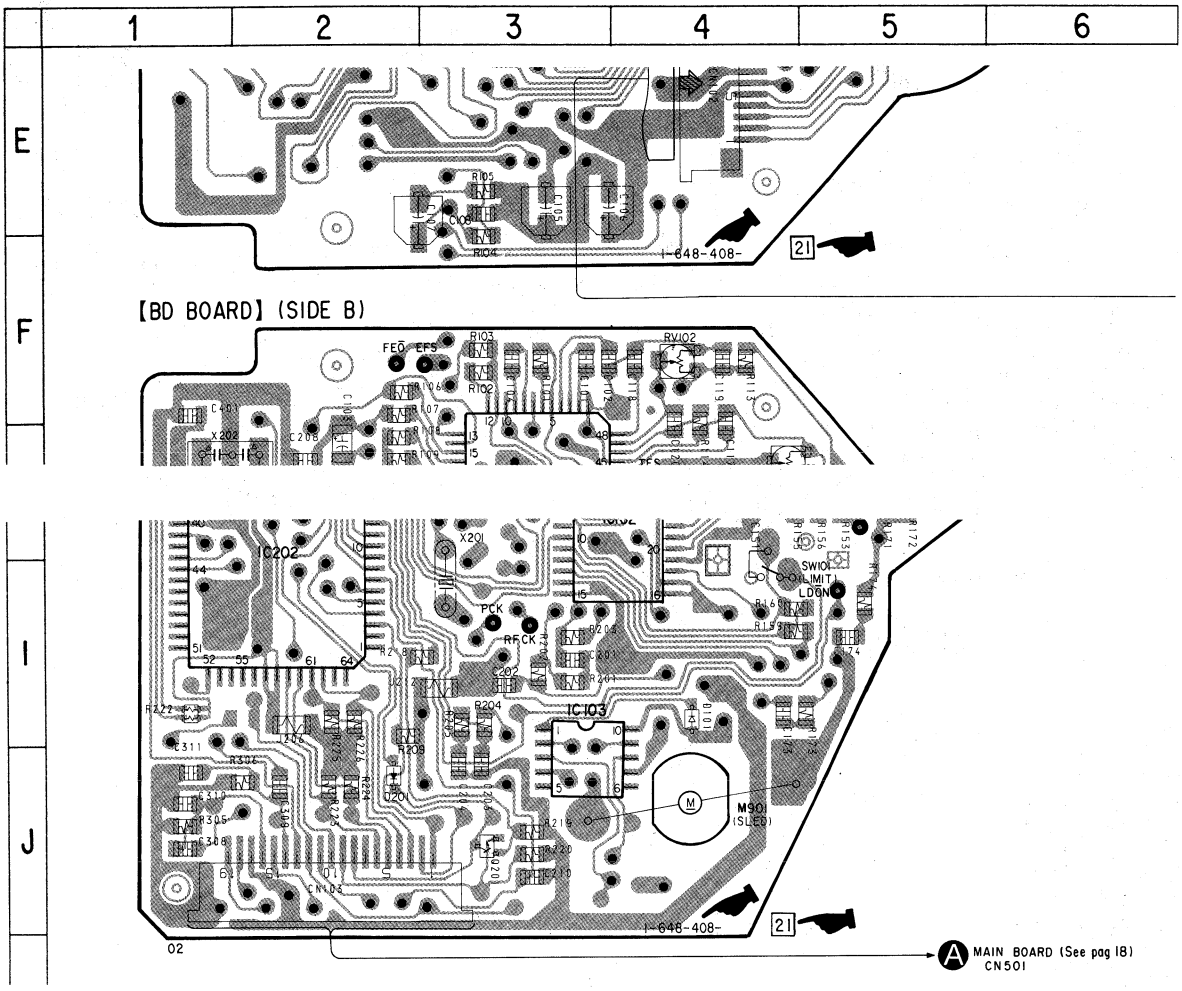
• SCHEMATIC DIAGRAM – DISPLAY SECTION – (Service Manual See page 41)



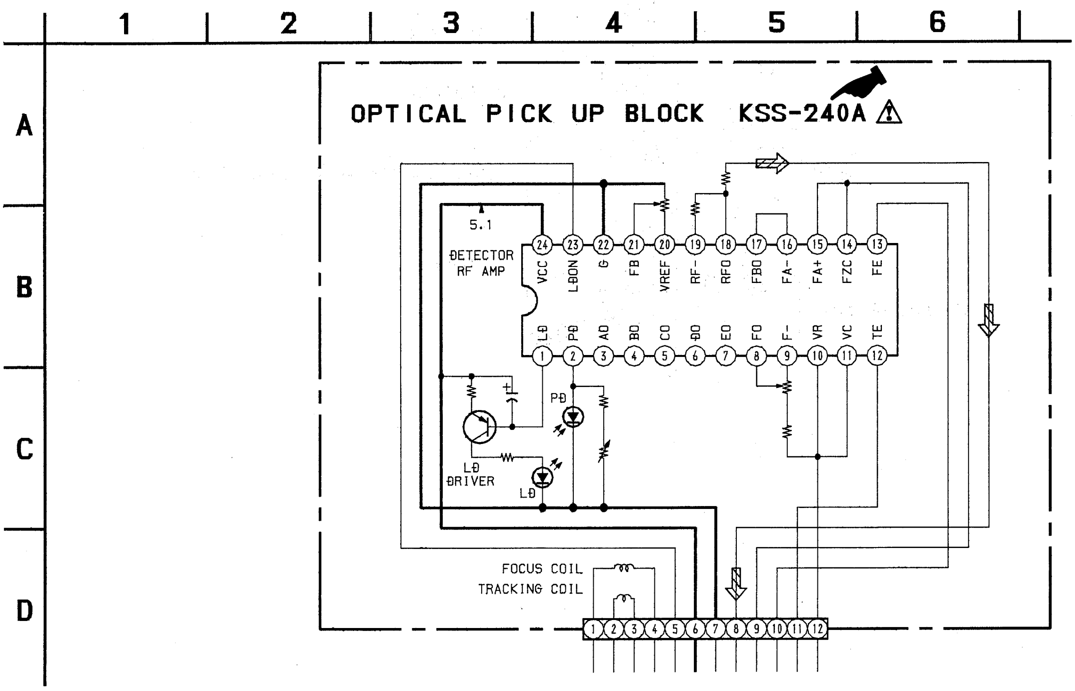
17
18
19
20
21
22
23
24
25
A
B
C
D
E
F
G
[POWER BOARD]
CA, E, AUS, EA, MX, MY, SP MODEL
IC801
STK4152MK2
STK4142MK2
POWER AMP
AEP, UK, IT, G
EE MODEL
CN801
TO
MAIN BOARD
CN854
(See page 22)
E
L
GND
R
R851 1k
C852 1 50V
EXCEPT G, IT MODEL
G, IT MODEL
C854 100p 1000p
C853 470p
R852 56k 22k
C851 560p
R854 56k
C856
R853 560
C855 47 50V
C833 0.047
C832 33 50V
R832 100 1/4W F
IC801 (1/2)
31.8
33.7
-0.1
-31.7
-1.3
-33.9
R855 100 1/4W (F)
R856 2.2k
R857 2.2k 1/2W
C857 47 50V
R831 100 1/4W F
Q801, 851
OVER LOAD DET
R861 0.22 2W
R863 47k
R858 1k
Q851 2SC1841
R859 15k
D851 1N4148
12.7
R860 100k
C858 0.1
C859 0.1
R862 10
C831 33 50V
C805 47 50V
R803 560
R805 4.7 1/4W (F)
R807 2.2k 1/2W
D801 1N4148
R810 100k
12.7
R812 10
C806
R804 56k
R802 56k 22k
C801 560p
R806 2.2k
C807 47 50V
R809 15k
C809 0.1
C803 470p
IC801 (2/2)
-33.7
R808 1k
Q801 2SC1841
C808 0.1
C804 100p 1000p
R801 1k
C802 1 50V
R811 0.22 2W
R813 56k
C834 220p
GND2
Q906 B+REG
R916 270 1/2W F
IC901
Q902, 903 B+REG

: corrected portion

● PRINTED WIRING BOARDS – CD SECTION – (Service Manual See page 47)

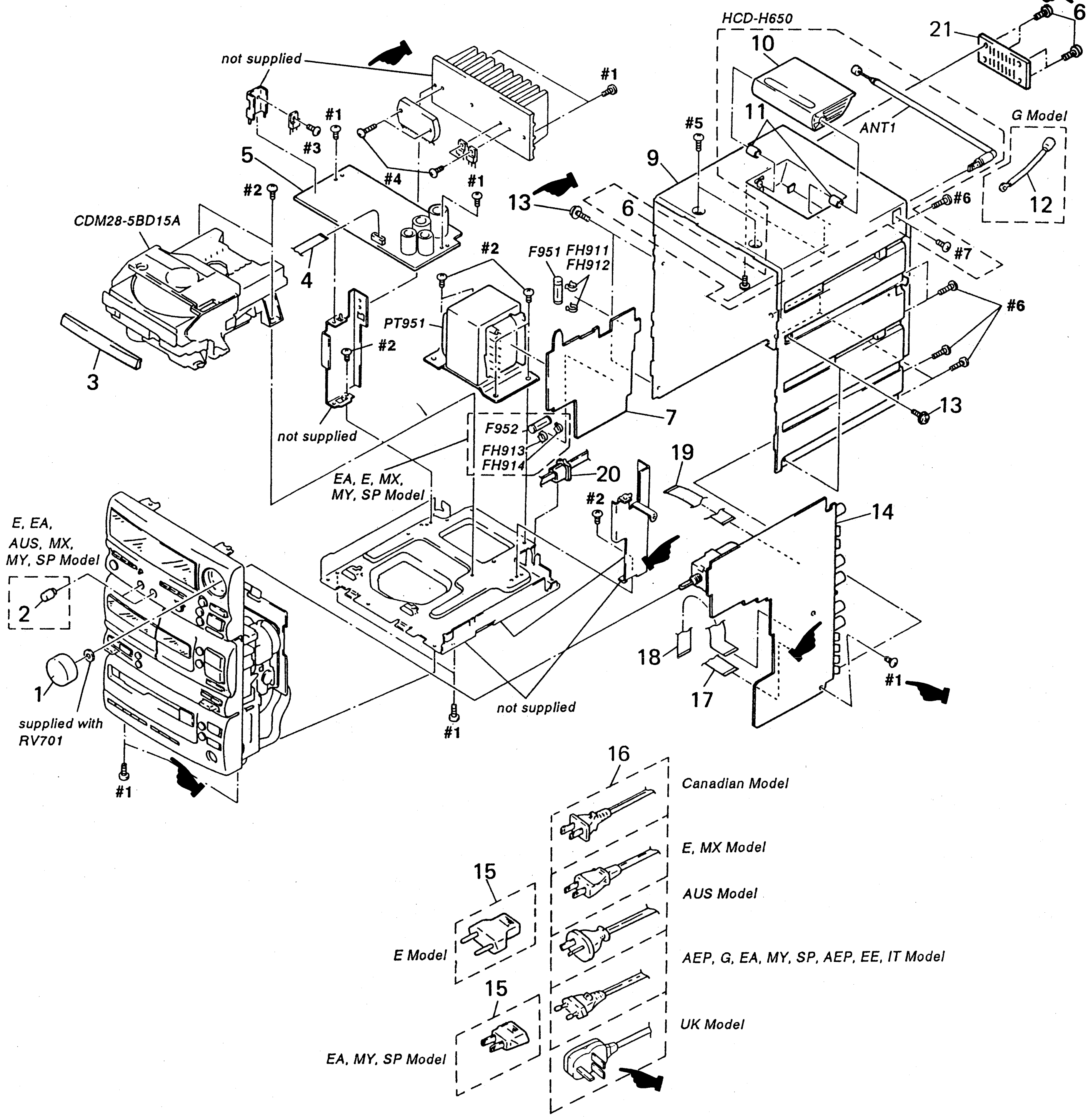

1
2
3
4
5
6
E
F
I
J
[BD BOARD] (SIDE B)
R105
C107
C108
R104
C105
C106
CN101
1-648-408-
21
FEO
EFS
R103
R102
R106
R107
R108
R109
C103
RV102
C401
X202
C208
IC202
X201
PCK
RFCK
R203
C201
C202
R201
R204
R208
R212
IC103
R209
D201
R219
R220
C210
R222
C311
R306
C310
R305
C308
C309
R206
R225
R226
R224
R223
CN103
M901 (SLED)
SW101 (LIMIT)
LDON
R160
R159
R174
R172
D101
02
A MAIN BOARD (See pag 18) CN501

● SCHEMATIC DIAGRAM – CD SECTION – (Service Manual See page 49)


1
2
3
4
5
6
A
B
C
D
OPTICAL PICK UP BLOCK KSS-240A ⚠
5.1
DETECTOR
RF AMP
VCC
LDON
G
FB
VREF
RF-
RFO
FBO
FA-
FA+
FZC
FE
LD
PD
AO
BO
CO
DO
EO
FO
F-
VR
VC
TE
PD
LD
DRIVER
LD
FOCUS COIL
TRACKING COIL

: corrected portion

• **EXPLODED VIEWS** (Service Manual See page 52)


HCD-H650
not supplied
#1
#1
#3
#4
#1
#2
5
CDM28-5BD15A
4
3
#2
#2
PT951
F951 FH911
FH912
not supplied
F952
FH913
FH914
EA, E, MX,
MY, SP Model
20
#2
19
10
11
ANT1
21
6
G Model
12
#5
9
13
6
#6
#7
#6
7
13
14
E, EA,
AUS, MX,
MY, SP Model
2
1
supplied with
RV701
#1
#1
not supplied
18
17
#1
16
Canadian Model
E, MX Model
AUS Model
AEP, G, EA, MY, SP, AEP, EE, IT Model
UK Model
15
E Model
15
EA, MY, SP Model

☞ : corrected portion

5-4. MECHANISM DECK SECTION-1 (Service Manual See page 56)
(DECK A : TCM-190RA12AL) ☞
(DECK B : TCM-190RB53A)

5-5. MECHANISM DECK SECTION-2 (Service Manual See page 57)
(DECK A : TCM-190RA12AL) ☞
(DECK B : TCM-190RB53A)

5-6. CD MECHANISM SECTION-1 (Service Manual See page 58)
(CDM28-5BD15A)
☞ ☞

- **ELECTRICAL PARTS LIST** (Servic Manual See page 64 – 80)

INCORRECT ⟶ **CORRECT**

Ref. No.	Part No.	Description	Part No.	Description	Remark
R2052 (Page 64)	1-249-429-11	CARBON 10K 5% 1/4W (G)		――――――	Deleted
C48 (Page 67)	1-130-485-00	MYLAR 0.015uF 5% 50V (EXCEPT Canadian)	1-130-485-00	MYLAR 0.15uF 5% 50V (EXCEPT Canadian, G, IT)	Changed
C48 (Page 67)		――――――	1-130-489-00	MYLAR 0.012uF 5% 50V (G, IT)	Added
C49 (Page 67)	1-130-485-00	MYLAR 0.15uF 5% 50V (EXCEPT Canadian)	1-130-485-00	MYLAR 0.15uF 5% 50V (EXCEPT Canadian, G, IT)	Changed
C49 (Page 67)		――――――	1-130-489-00	MYLAR 0.012uF 5% 50V (G, IT)	Added
C66 (Page 67)	1-162-294-31	CERAMIC 0.001uF 10% 50V	1-162-294-31	CERMIC 0.001uF 10% 50V (EXCEPT G, IT)	Changed
C507 (Page 67)	1-161-379-00	CERAMIC 0.01uF 20% 25V	1-164-159-11	CERAMIC 0.1uF 20% 50V	Changed
C1002 (Page 68)		――――――	1-162-205-31	CERAMIC 18PF 5% 50V (G, IT)	Added
R7 (Page 69)	1-247-807-31	CARBON 100 5% 1/4W	1-247-807-31 1-247-811-31	CARBON 100 5% 1/4W (EXCEPT G, IT) CARBON 150 5% 1/4W (G, IT)	Changed
R12 (Page 69)	1-249-437-11	CARBON 47K 5% 1/4W	1-249-429-11	CARBON 10K 5% 1/4W	Changed
R59 (Page 70)	1-249-431-11	CARBON 15K 5% 1/4W	1-249-431-11 1-249-437-11	CARBON 15K 5% 1/4W (EXCEPT G, IT) CARBON 47K 5% 1/4W (G, IT)	Changed
R60 (Page 70)	1-249-431-11	CARBON 15K 5% 1/4W	1-249-431-11 1-249-437-11	CARBON 15K 5% 1/4W (EXCEPT G, IT) CARBON 47K 5% 1/4W (G, IT)	Changed
R63 (Page 70)	1-249-412-11	CARBON 390 5% 1/4W	1-249-412-11 1-247-820-11	CARBON 390 5% 1/4W (EXCEPT G, IT) CARBON 360 5% 1/4W (G, IT)	Changed
R64 (Page 70)	1-249-412-11	CARBON 390 5% 1/4W	1-249-412-11 1-247-820-11	CARBON 390 5% 1/4W (EXCEPT G, IT) CARBON 360 5% 1/4W (G, IT)	Changed
R708 (Page 71)	1-249-427-11	CARBON 6.8K 5% 1/4W	1-249-426-11	CARBON 5.6K 5% 1/4W	Changed
R758 (Page 71)	1-249-427-11	CARBON 6.8K 5% 1/4W	1-249-426-11	CARBON 5.6K 5% 1/4W	Changed
C780 (Page 74)		――――――	1-161-379-00	CERAMIC 0.01uF 20% 25V (G, IT)	Added
R802 (Page 75)	1-249-438-11	CARBON 56K 5% 1/4W	1-249-433-11	CARBON 22K 5% 1/4W	Changed
R852 (Page 71)	1-249-438-11	CARBON 56K 5% 1/4W	1-249-433-11	CARBON 22K 5% 1/4W	Changed
#11 (Page 80)	7-621-255-15	SCREW +P 2X3		――――――	Deleted

SS-H650

SERVICE MANUAL

PHOTO : AEP Model

Canadian Model
AEP Model
UK Model
E Model
Australian Model

·This set is the speaker system in
FH-B650/FH-B711/MHC-650.

SPECIFICATIONS

Speaker system	: 3way system
Speaker units	: Woofer : 13cm dia., cone type Tweeter : 5cm dia., cone type Super tweeter : 2cm dia., dome type
Enclosure	: Bass reflex
Rated impedance	: 6 ohms
Dimensions	: Approx. 175 × 285 × 240 mm (7 × 11¼ × 9½ inches)
Weight	: Approx. 2.8 kg

Design and specification subject to change without notice.

MICROFILM

SPEAKER SYSTEM

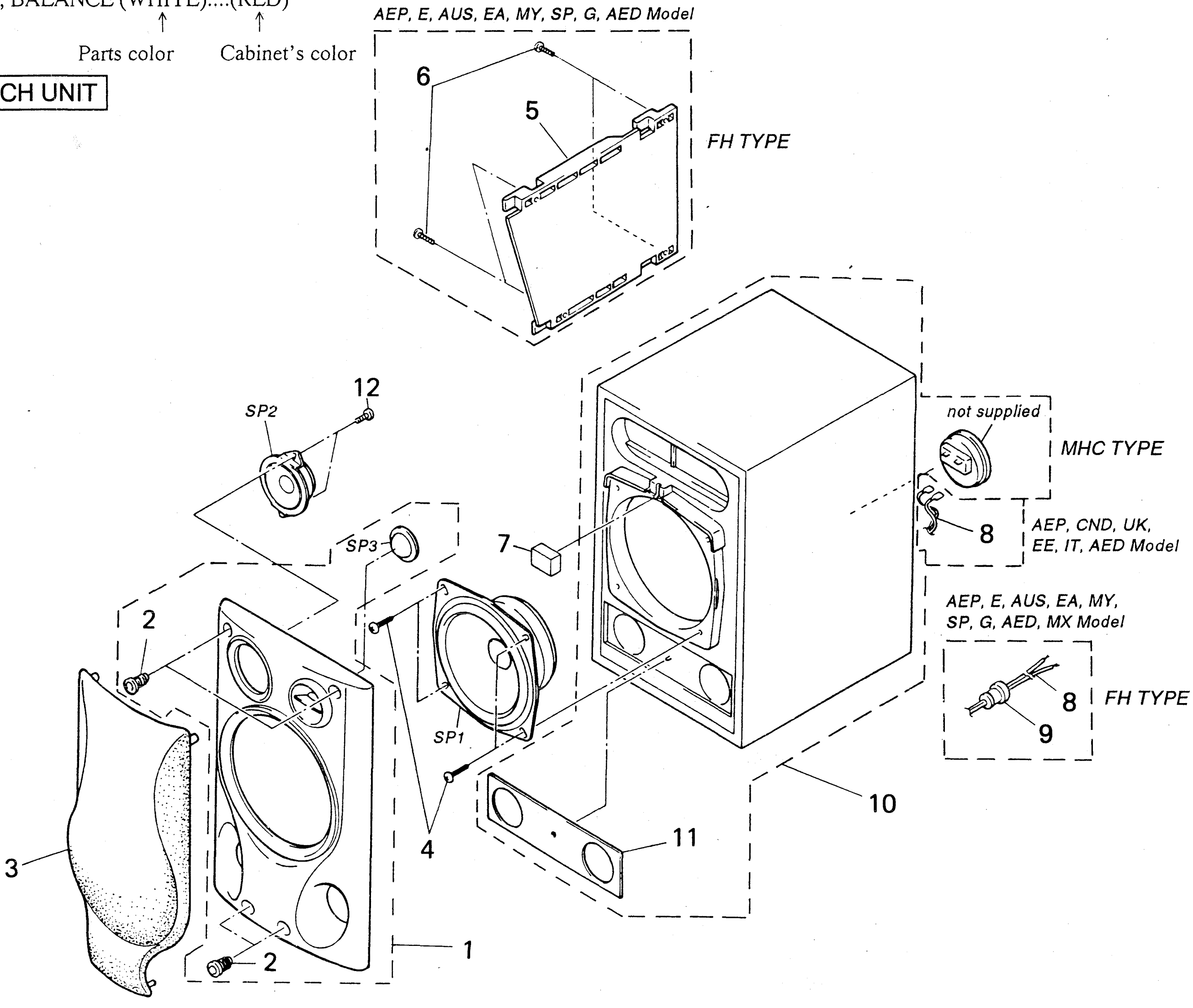
SONY®

EXPLODED VIEW AND PARTS LIST

NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Color indication of Appearance Parts Example :
  KNOB, BALANCE (WHITE)....(RED)
  ↑ Parts color ↑ Cabinet's color
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- AED : German Norway Sweden Finland Denmark
- IT : Italian Model
  EA : Saudi Arabia Model
  G : German Model
  EE : East European Model
  CND : Canadian Model
  AUS : Australian Model
  MY : Malaysia
  SP : Singapore
  MX : Mexican

Fig : R-CH UNIT


AEP, E, AUS, EA, MY, SP, G, AED Model
6
5
FH TYPE
12
SP2
SP3
7
not supplied
MHC TYPE
8
AEP, CND, UK, EE, IT, AED Model
AEP, E, AUS, EA, MY, SP, G, AED, MX Model
8
9
FH TYPE
10
11
SP1
4
2
3
2
1

Ref. No.	Part No.	Description	Remark
1	X-4944-266-1	PANEL (L) ASSY, FRONT (BLACK)	
1	X-4944-281-1	PANEL (R) ASSY, FRONT (BLACK)	
1	X-4944-685-1	PANEL (L) ASSY, FRONT (GRAY)	
1	X-4944-686-1	PANEL (R) ASSY, FRONT (GRAY)	
2	4-951-733-01	CATCHER	
3	X-4944-265-1	FRAME ASSY GRILLE	
4	4-874-614-11	SCREW +BVTP 3X8 TYPE2 SLIT	
5	4-950-752-01	PANEL (L), SIDE (FH TYPE)	
5	4-950-753-01	PANEL (R), SIDE (FH TYPE)	
6	4-874-614-61	SCREW (4) (3.5X16), TAPPING (FH TYPE)	
7	9-911-840-XX	PACKING	
8	1-574-792-11	CORD, SPEAKER (FH TYPE)	
8	1-575-610-11	CORD, SPEAKER (MHC TYPE)	
* 9	4-965-095-01	CLIPPER, CORD (FH TYPE)	
* 10	A-4353-587-A	CABINET ASSY, SPEAKER (AEP, E, EA, AUS, MY, SP, MX) (FH TYPE)	
* 10	A-4353-588-A	CABINET ASSY, SPEAKER (CND, AEP, UK, EE, IT) (MHC TYPE)	
* 10	A-4353-765-A	CABINET ASSY, SPEAKER (G, AED) (FH TYPE)	
* 10	A-4353-766-A	CABINET ASSY, SPEAKER (G, AED) (MHC TYPE)	
11	4-962-988-01	PACKING	
12	7-685-646-79	SCREW +BVTP 3X8 TYPE2 SLIT	
SP1	1-504-503-11	SPEAKER (12cm) (FH TYPE)	
SP1	1-504-452-11	SPEAKER (12cm) (MHC TYPE)	
SP2	1-504-504-11	SPEAKER (5cm) (FH TYPE)	
SP2	1-504-451-11	SPEAKER (5cm) (MHC TYPE)	
SP3	1-544-732-11	SPEAKER (2cm)	

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Audio Group